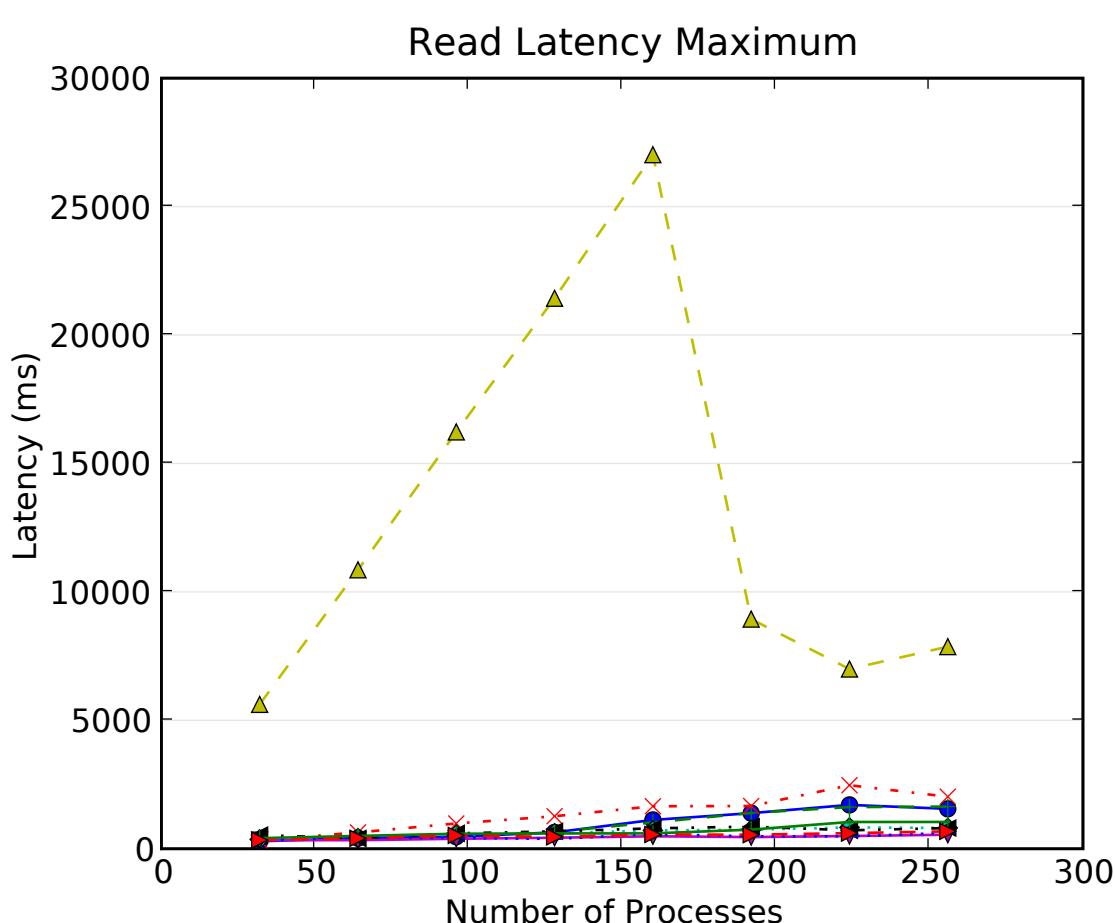
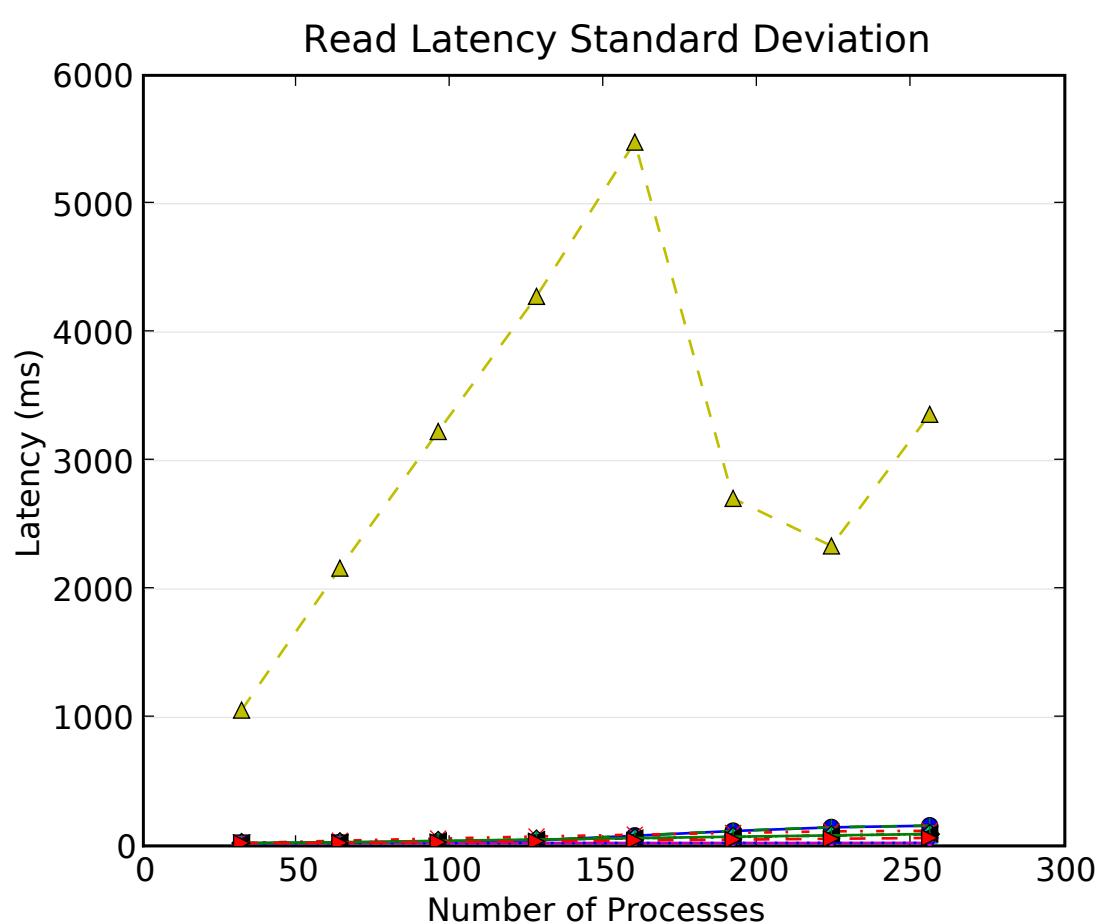
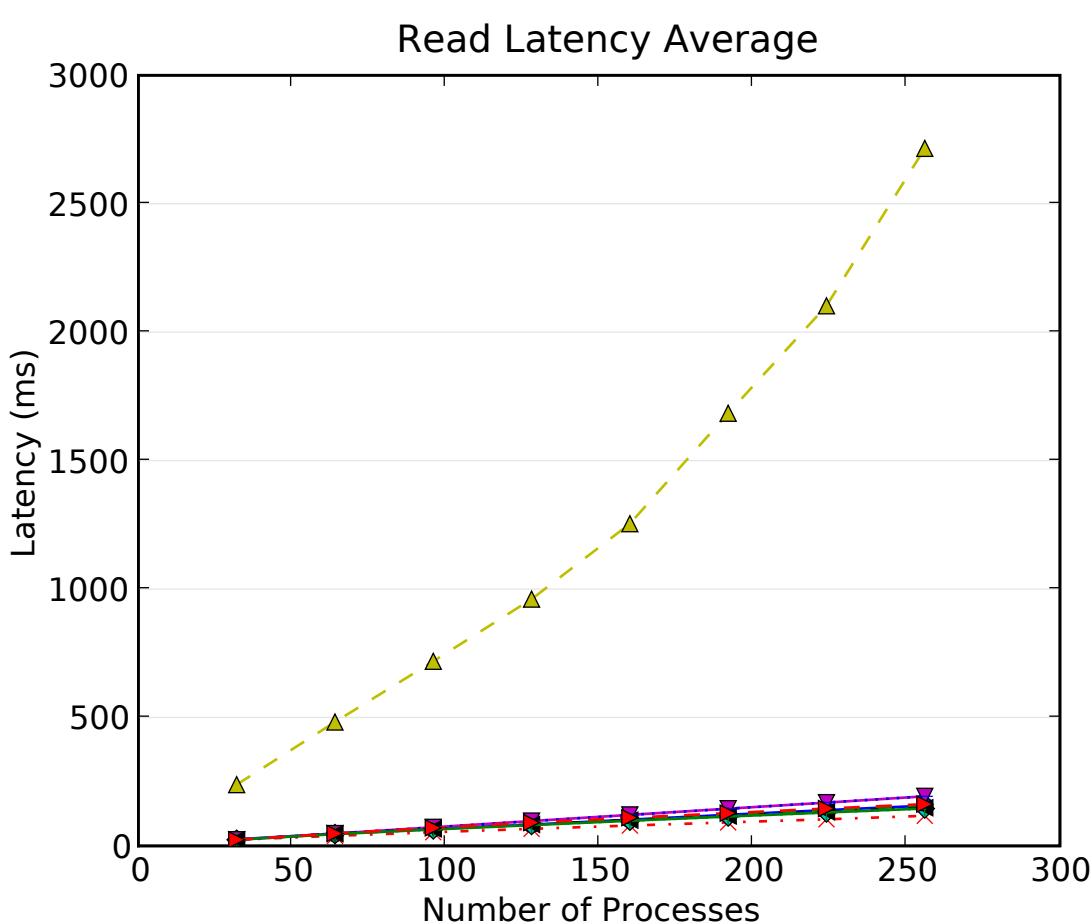
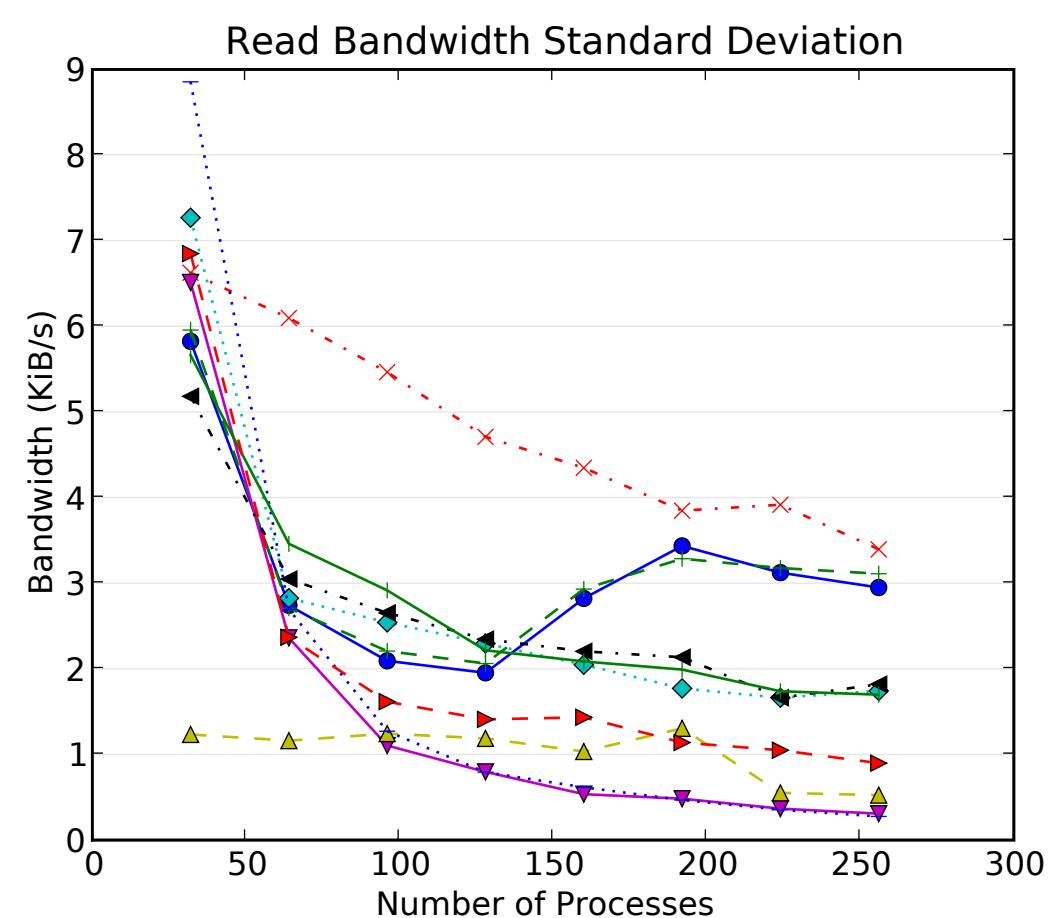
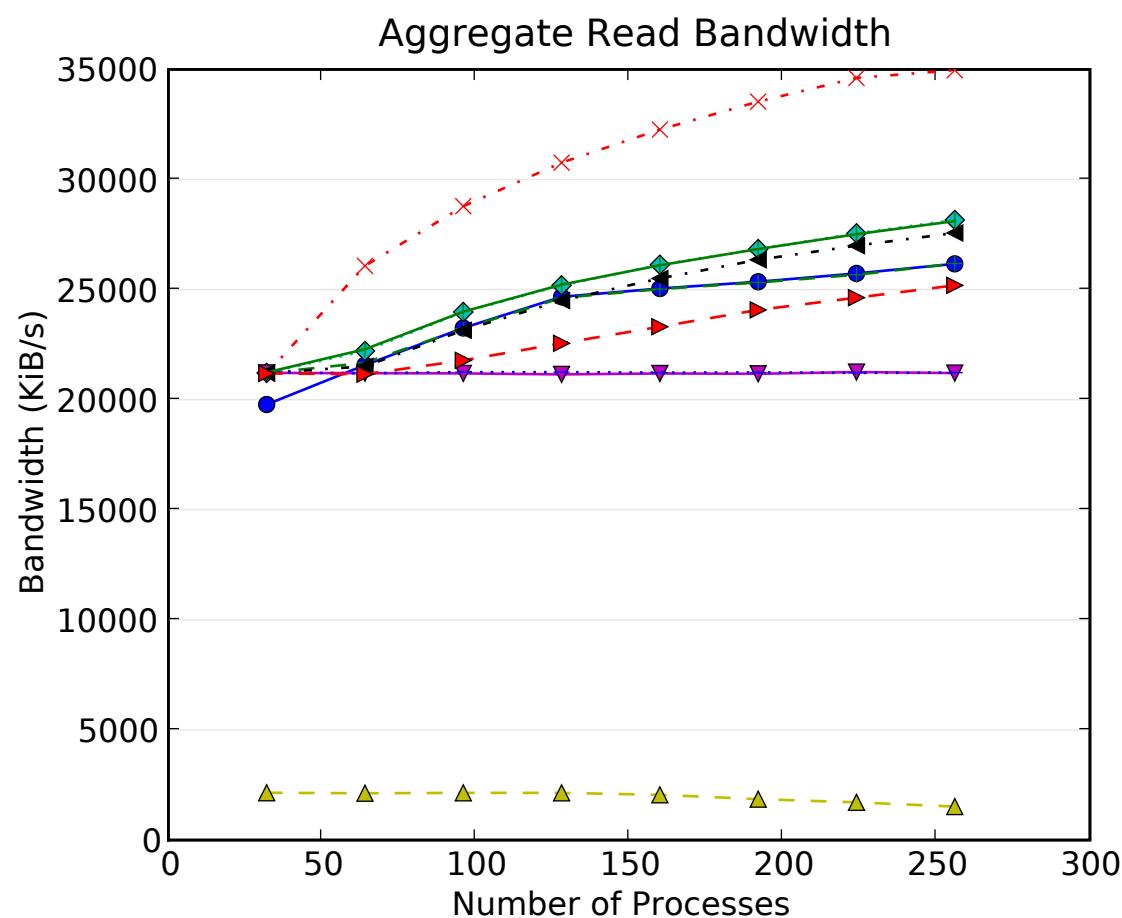
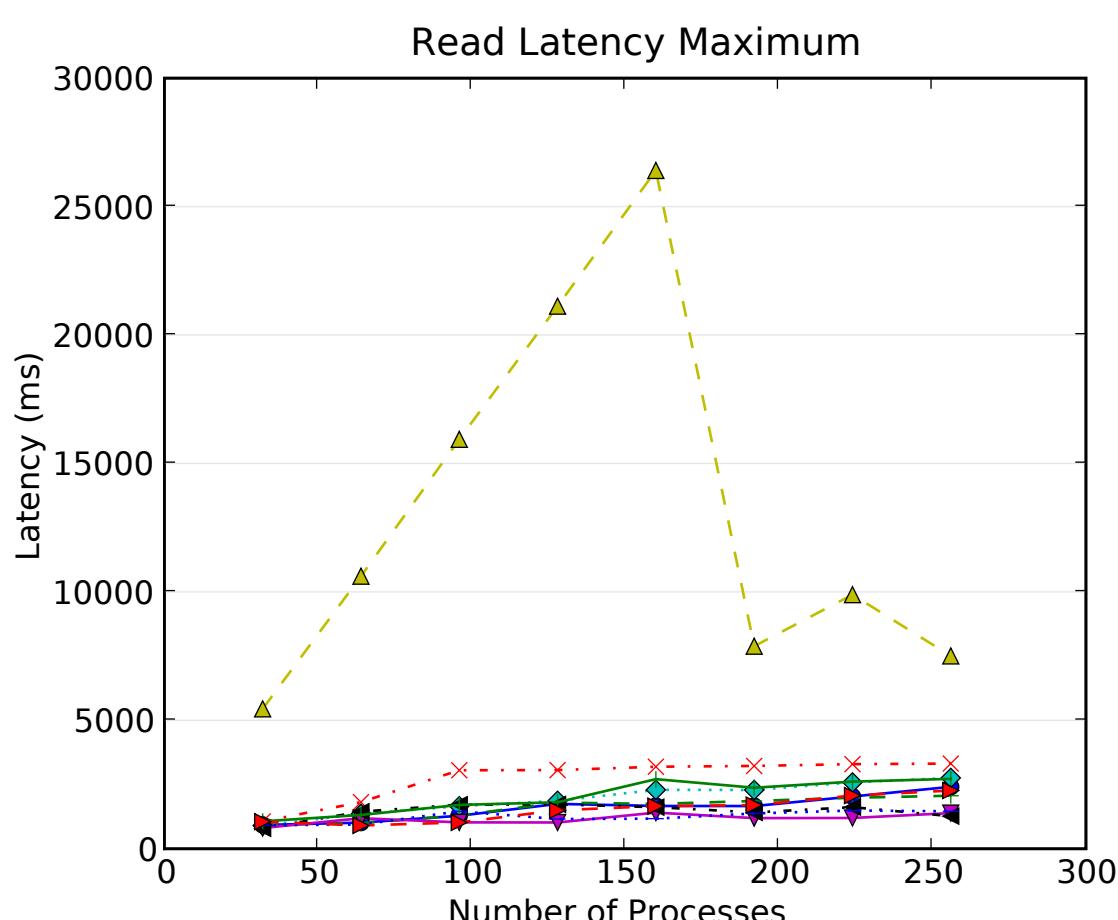
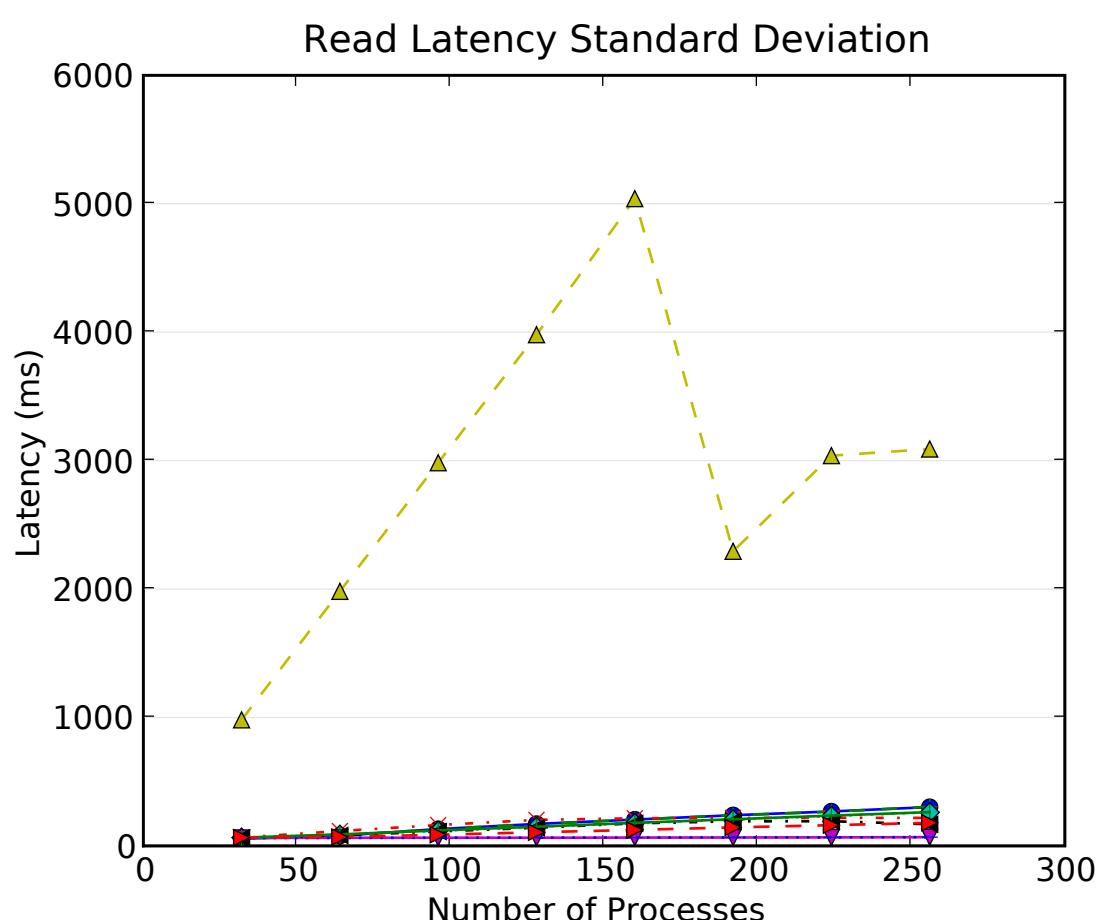
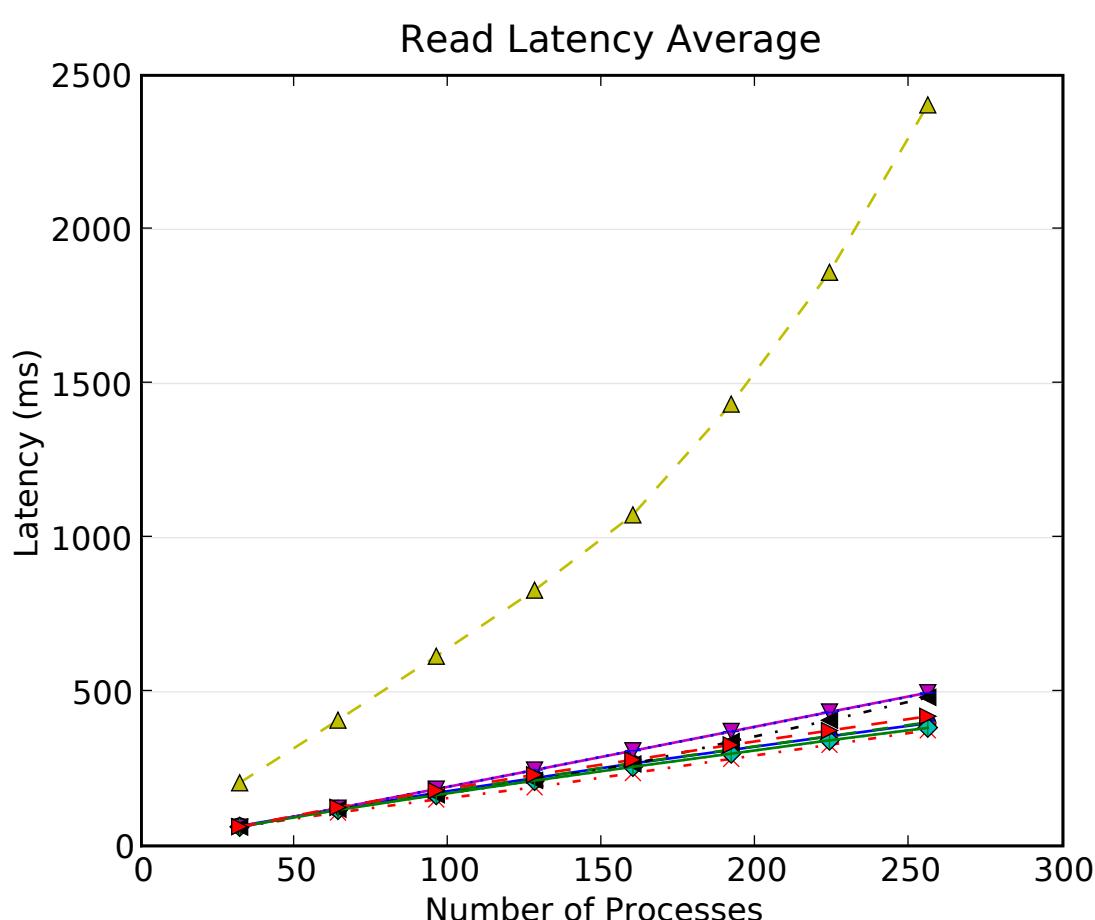
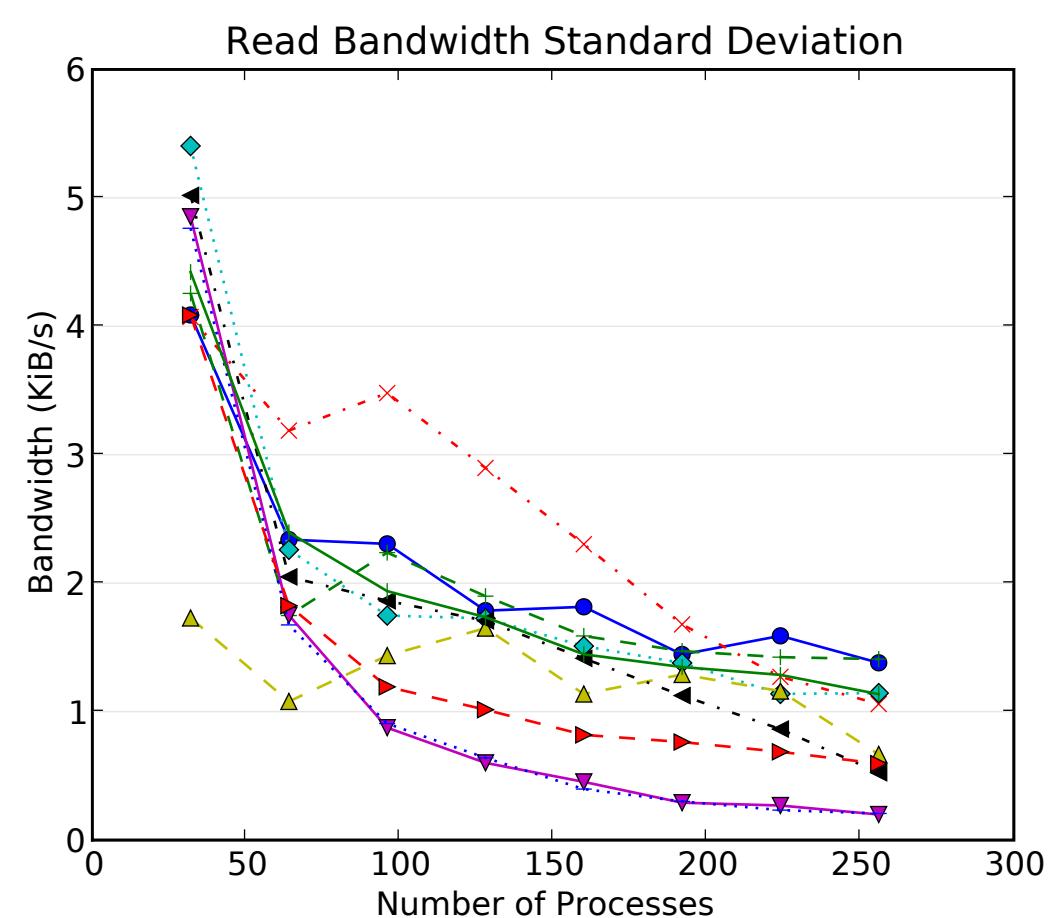
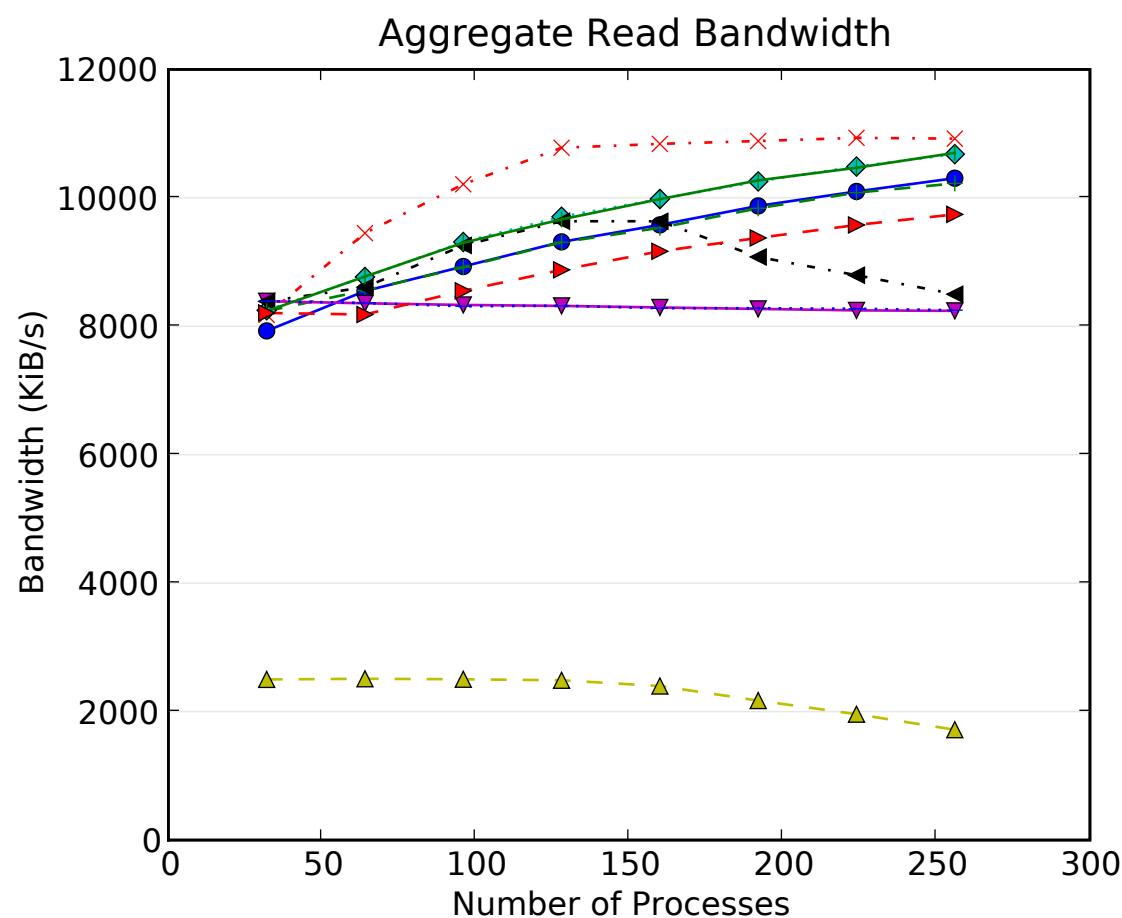


# RAID 0 - Random readers



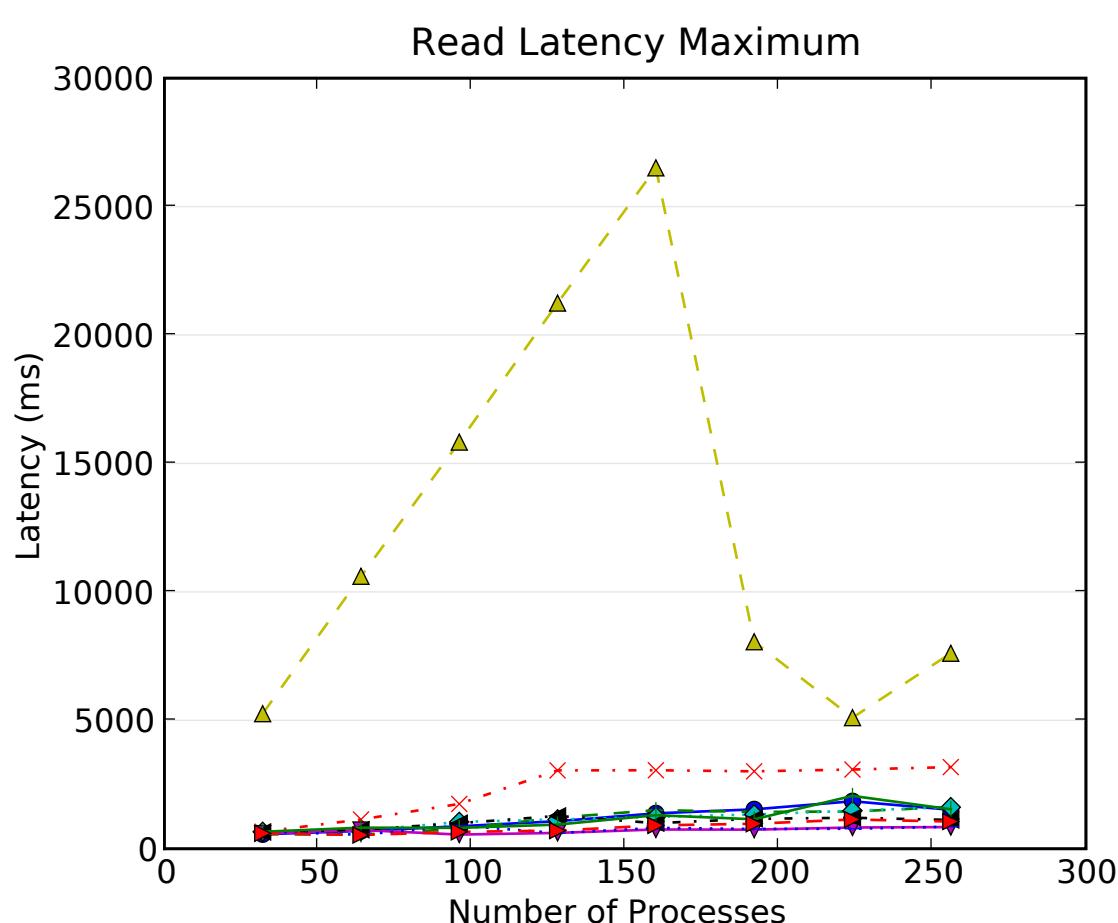
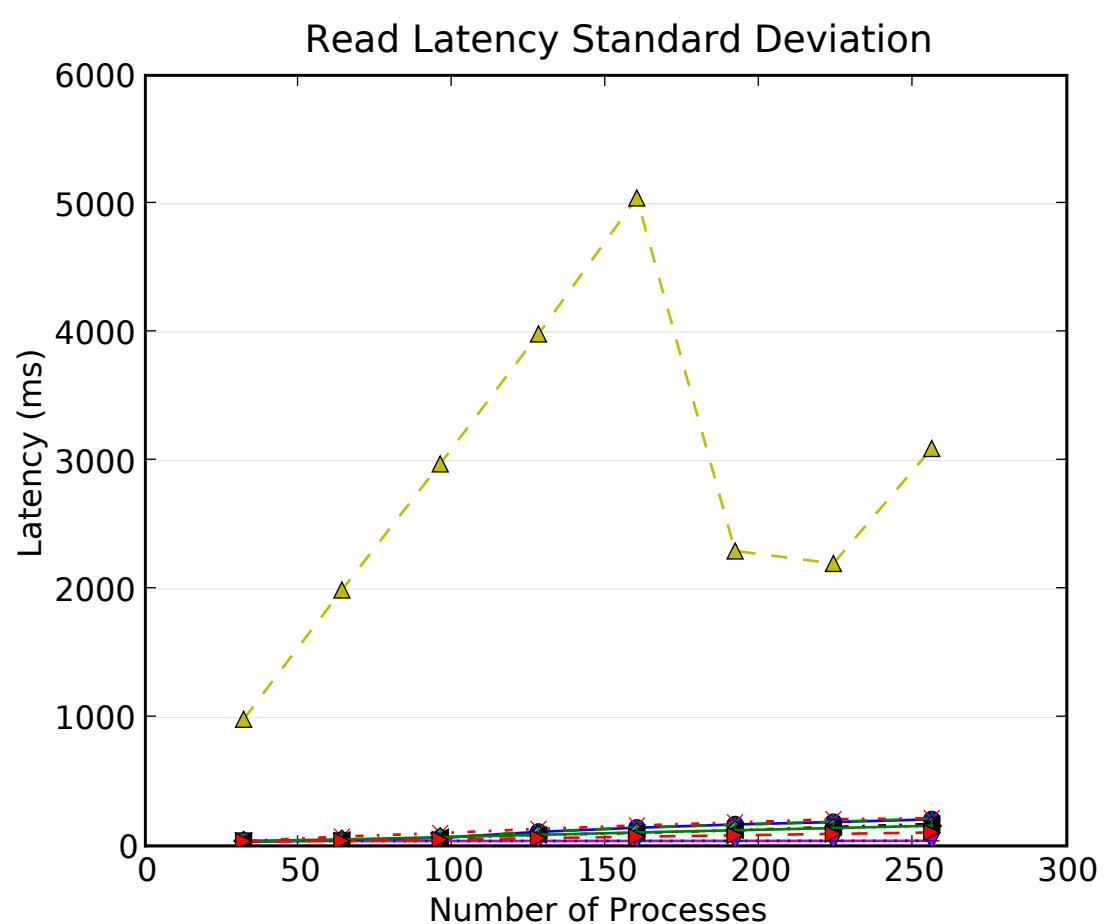
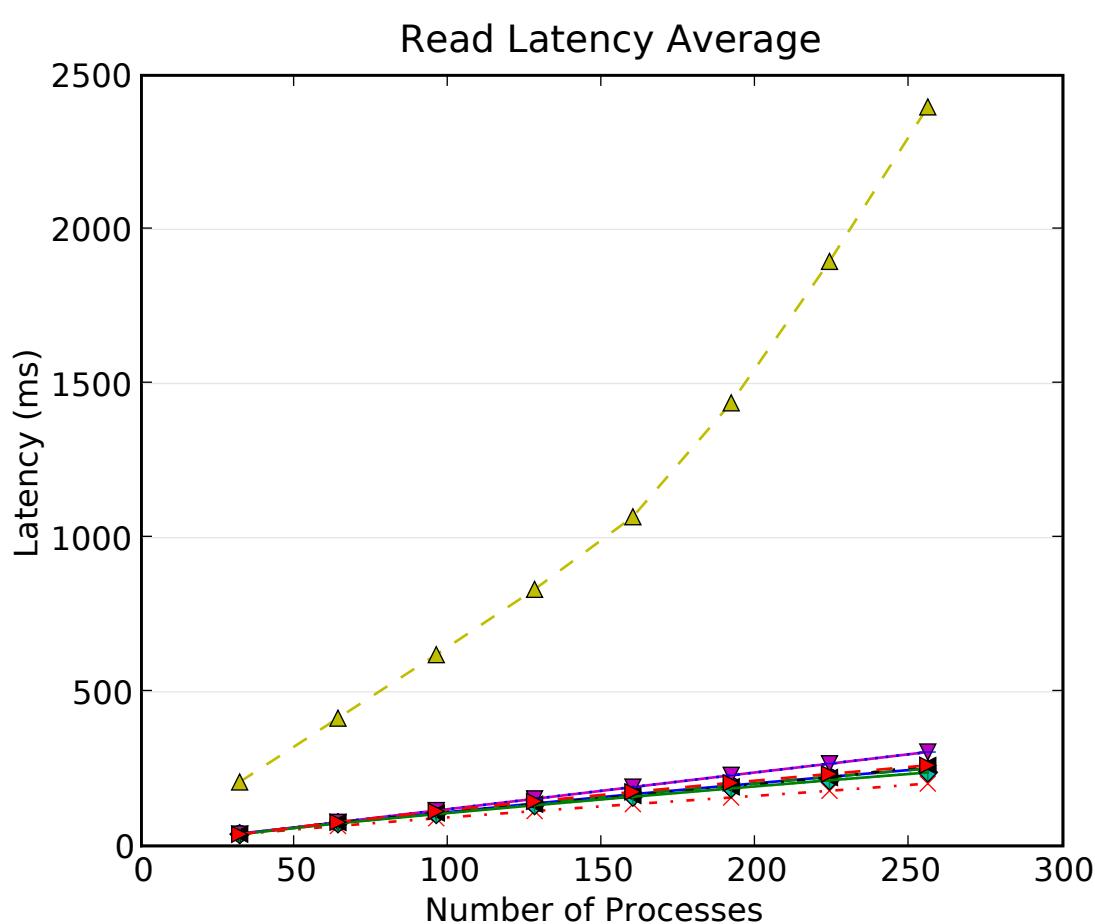
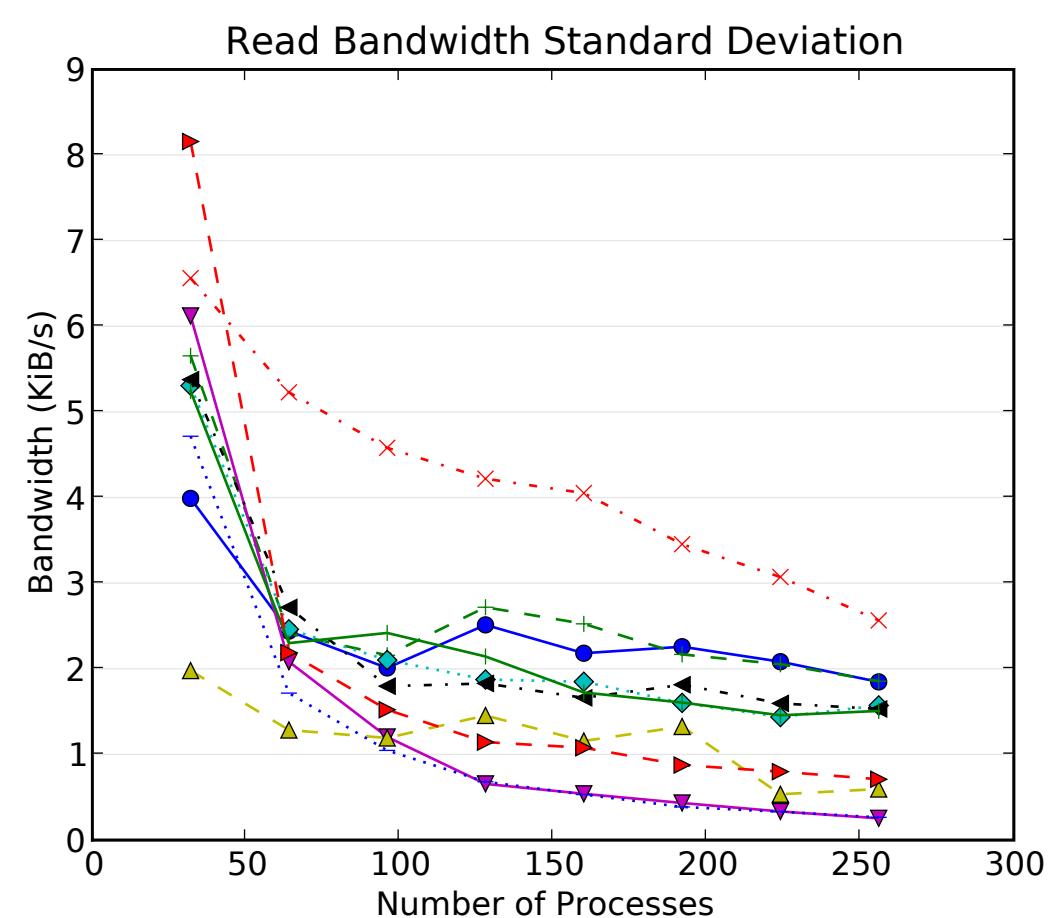
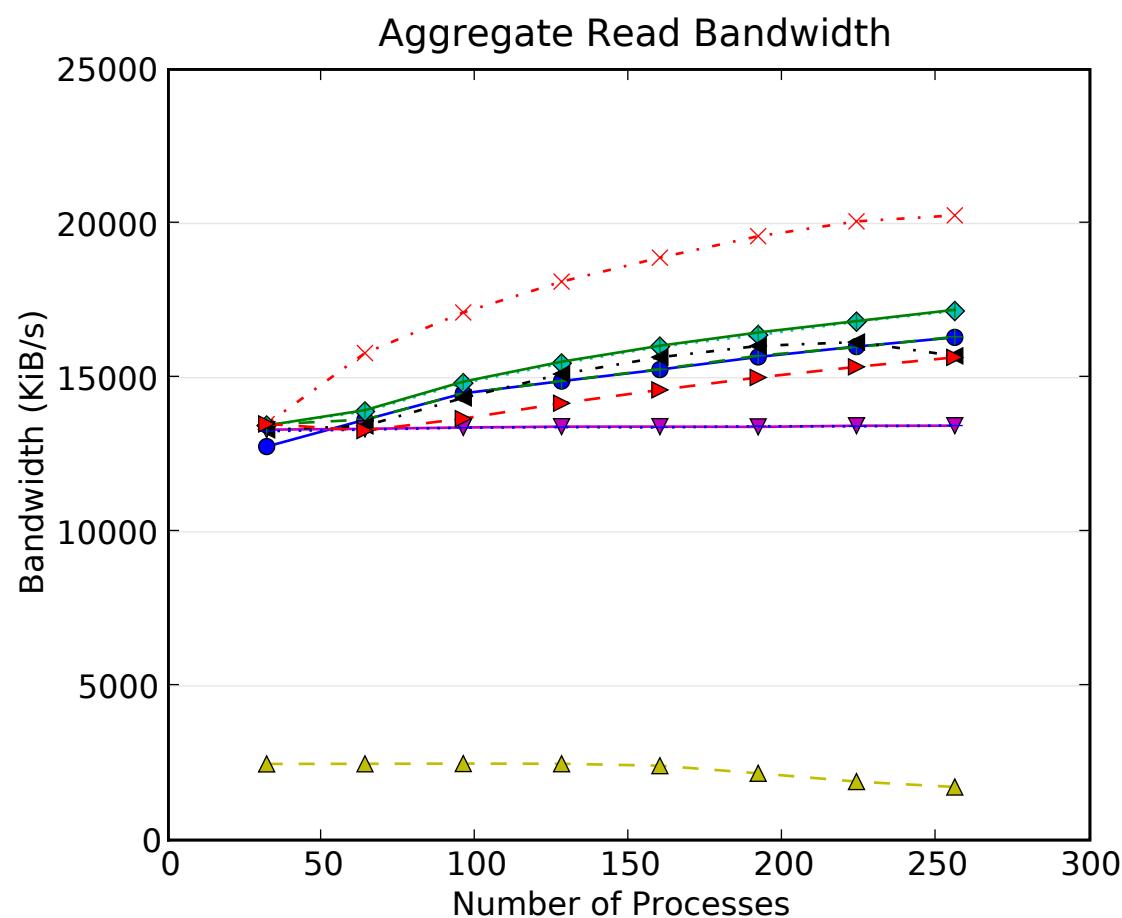
● — as-antic	— + as-noantic
✖ — bigq	··· ◆ vr-scan
▼ — fifo	— ▲ cfq-idle
▲ — cfq-idle	··· ▲ deadline
··· ▲ deadline	— · noop
— · noop	— + vr-sstf
··· ▲ cfq-noidle	··· ▲ cfq-noidle

# RAID 1+0 (2 disks) - Random readers



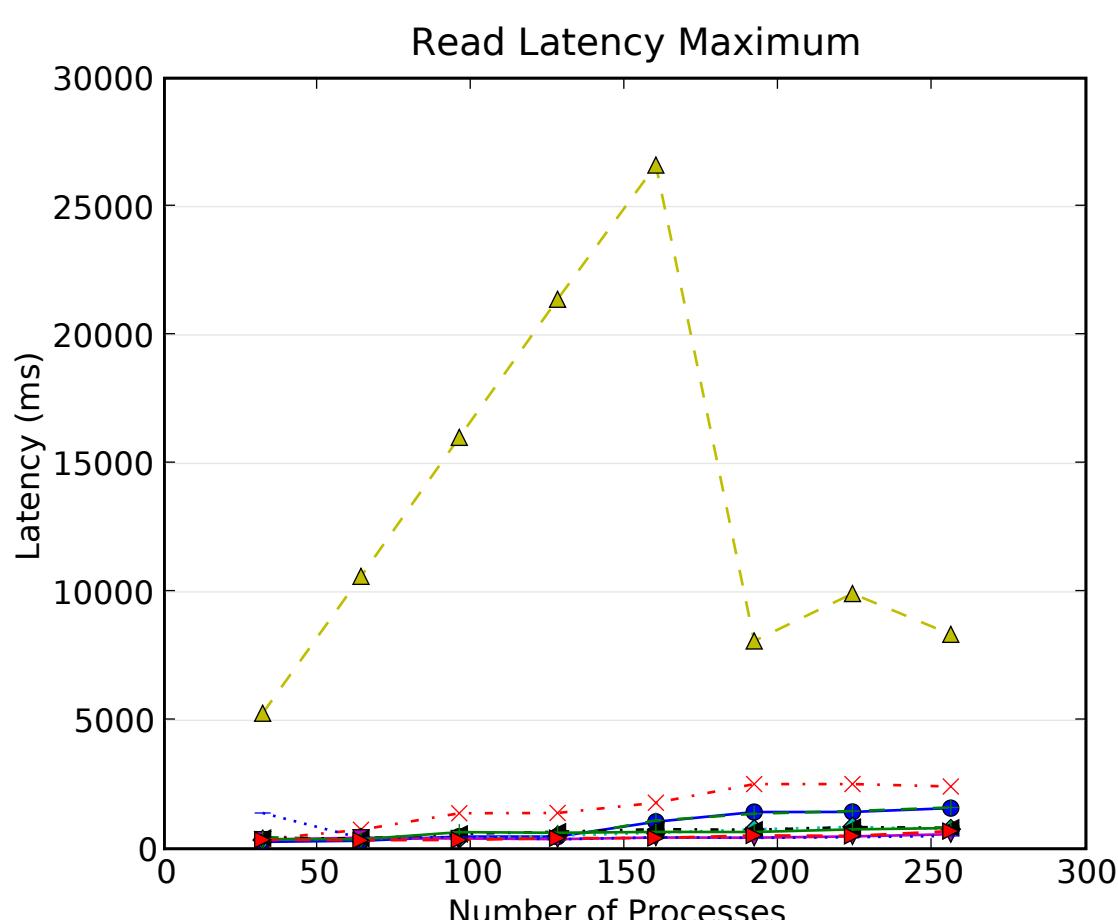
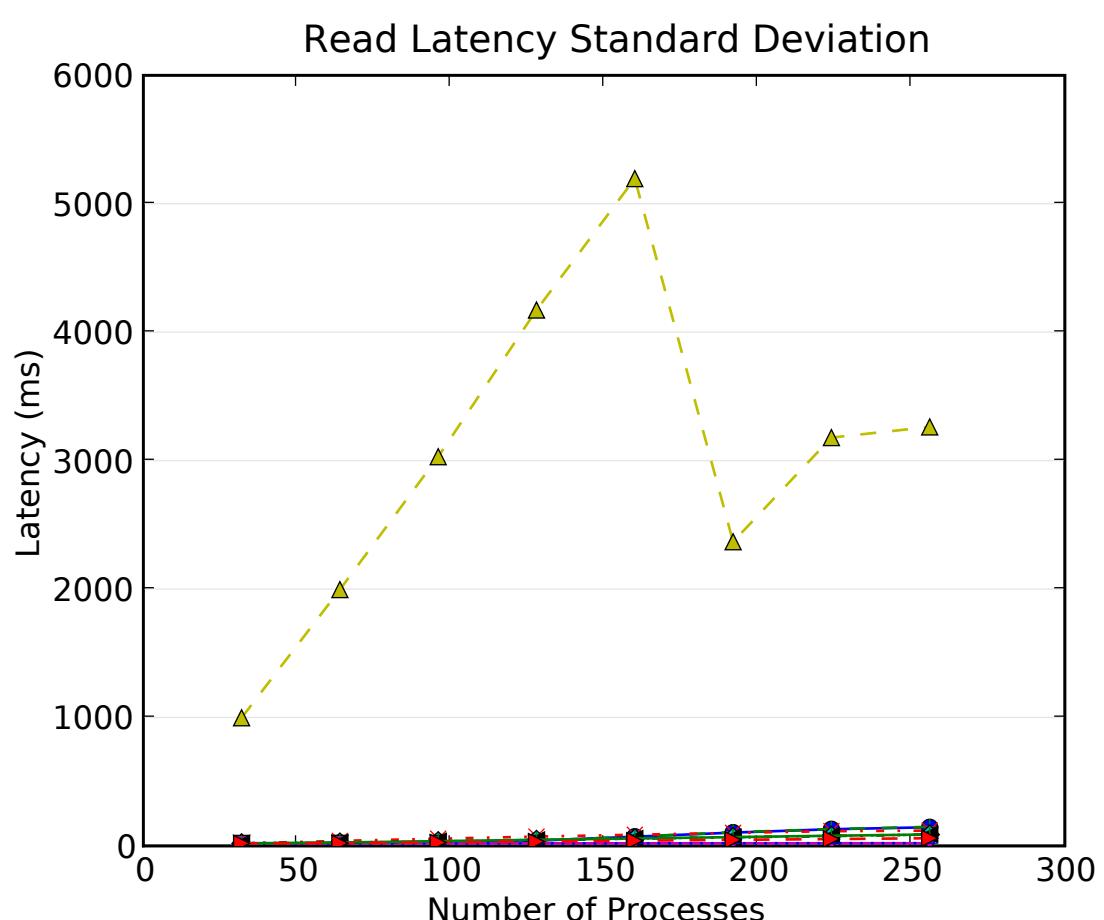
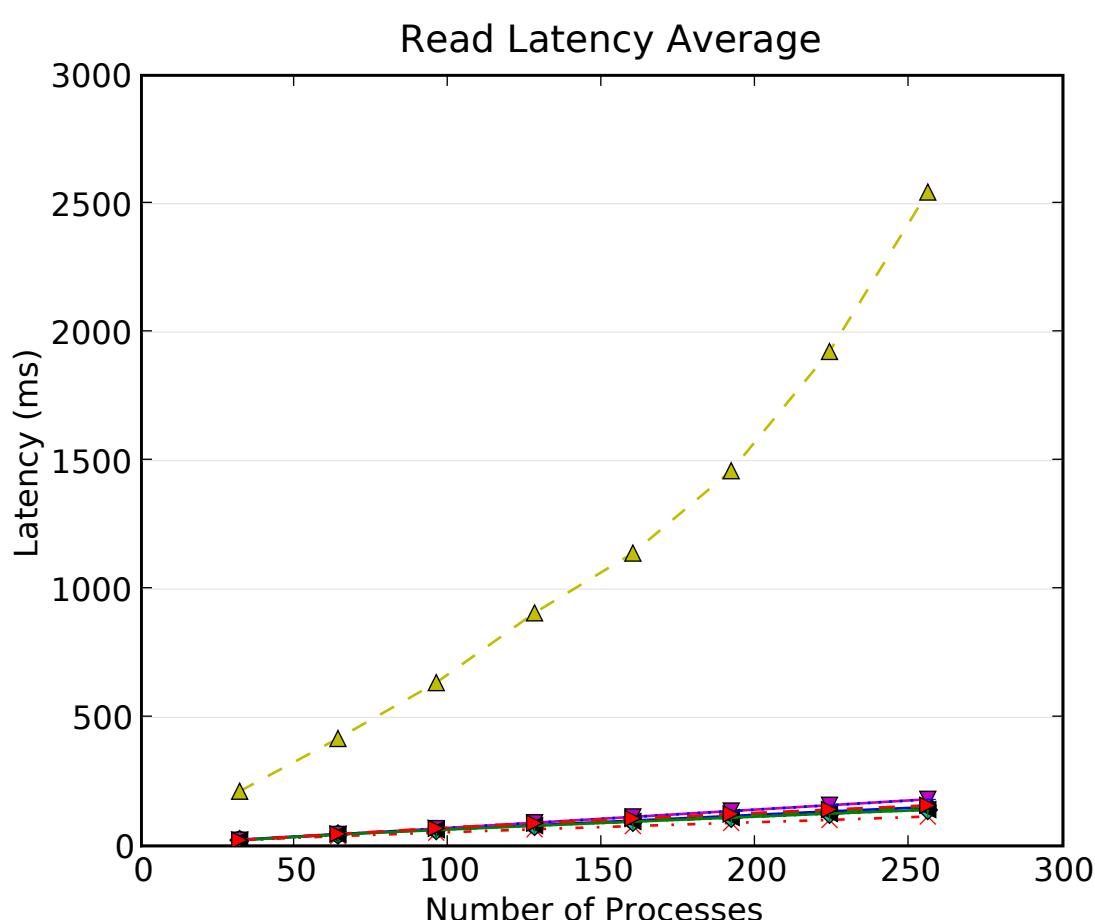
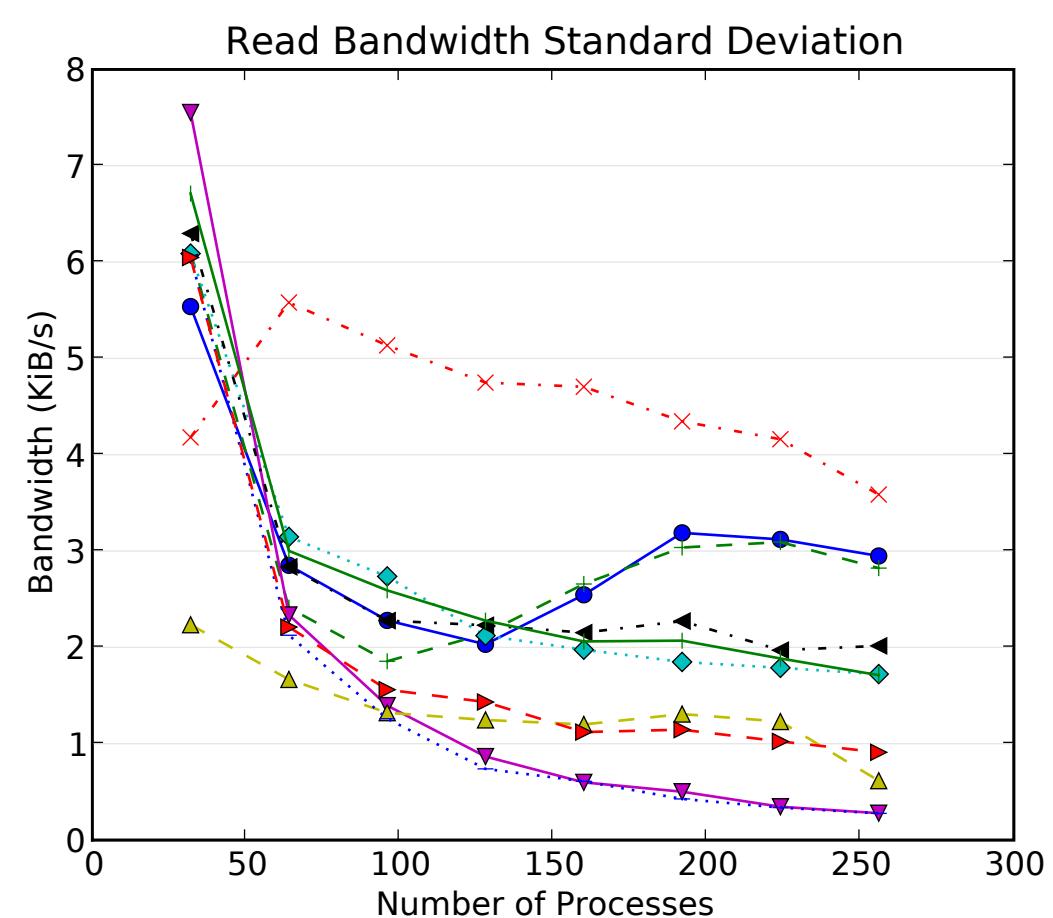
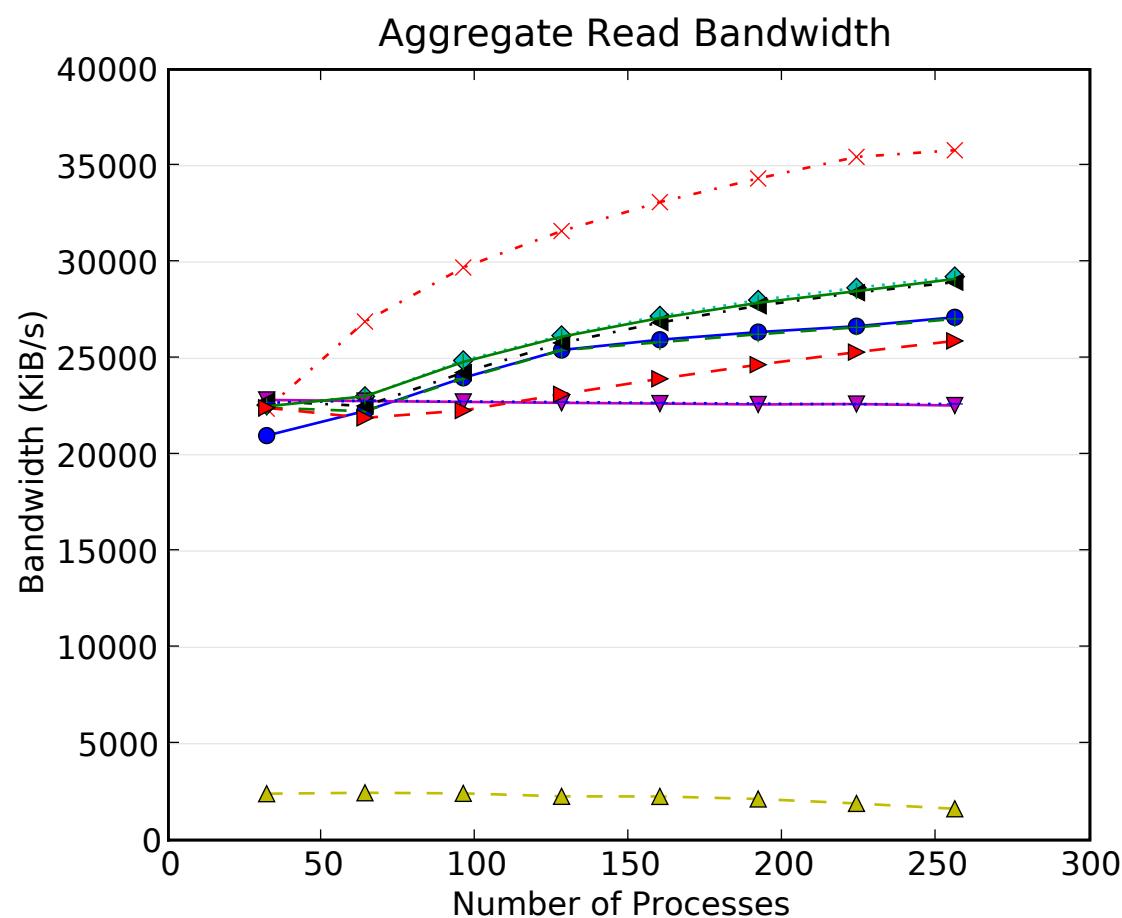
● — as-antic	○ - - as-noantic
✖ - - bigq	◆ - - vr-scan
▼ - - fifo	▲ - - cfq-idle
■ - - deadline	● - - noop
— vr-sstf	— cfq-noidle

# RAID 1+0 (4 disks) - Random readers



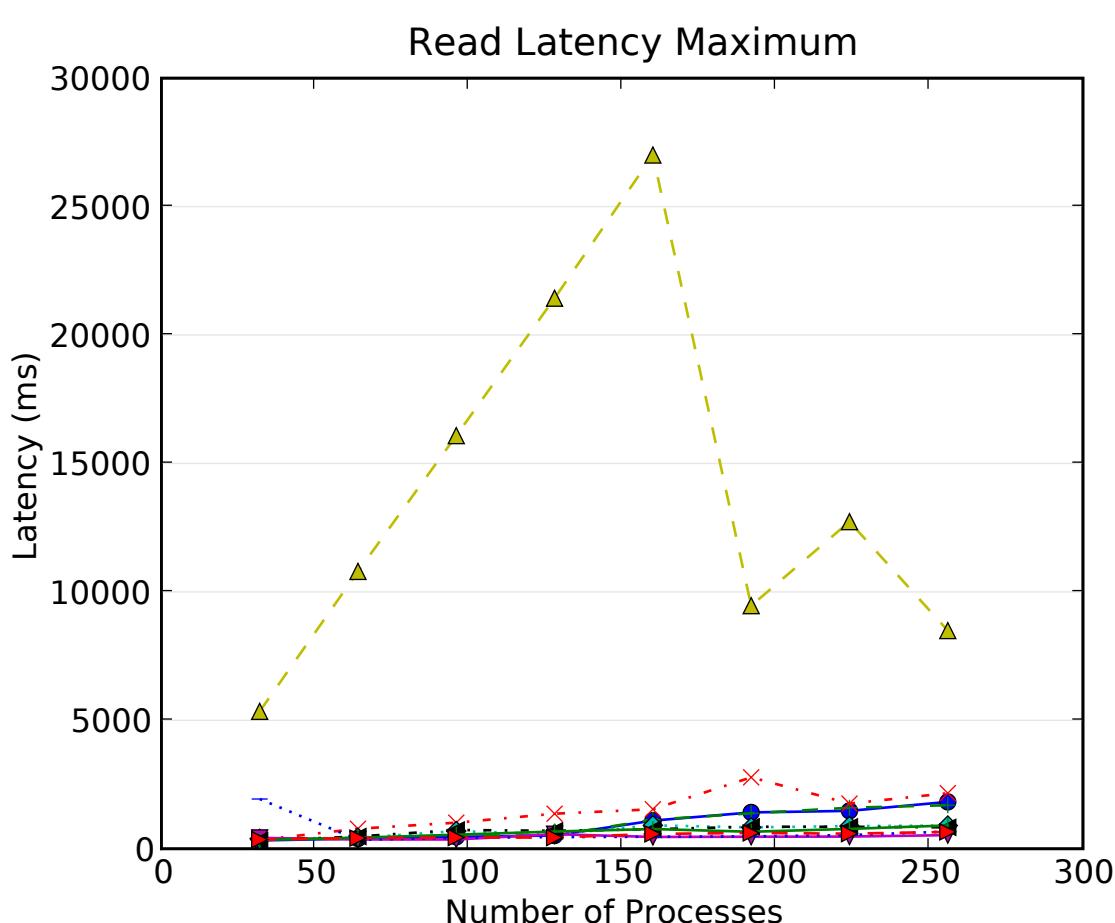
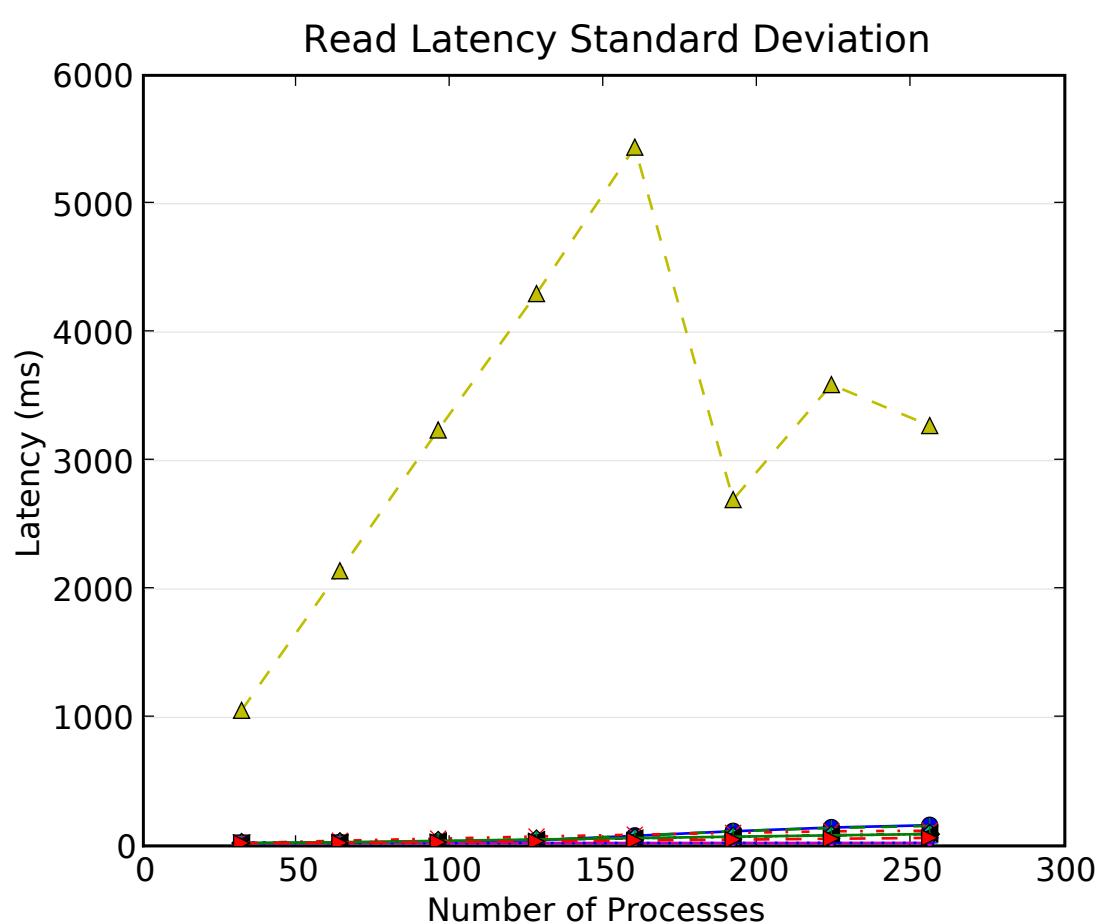
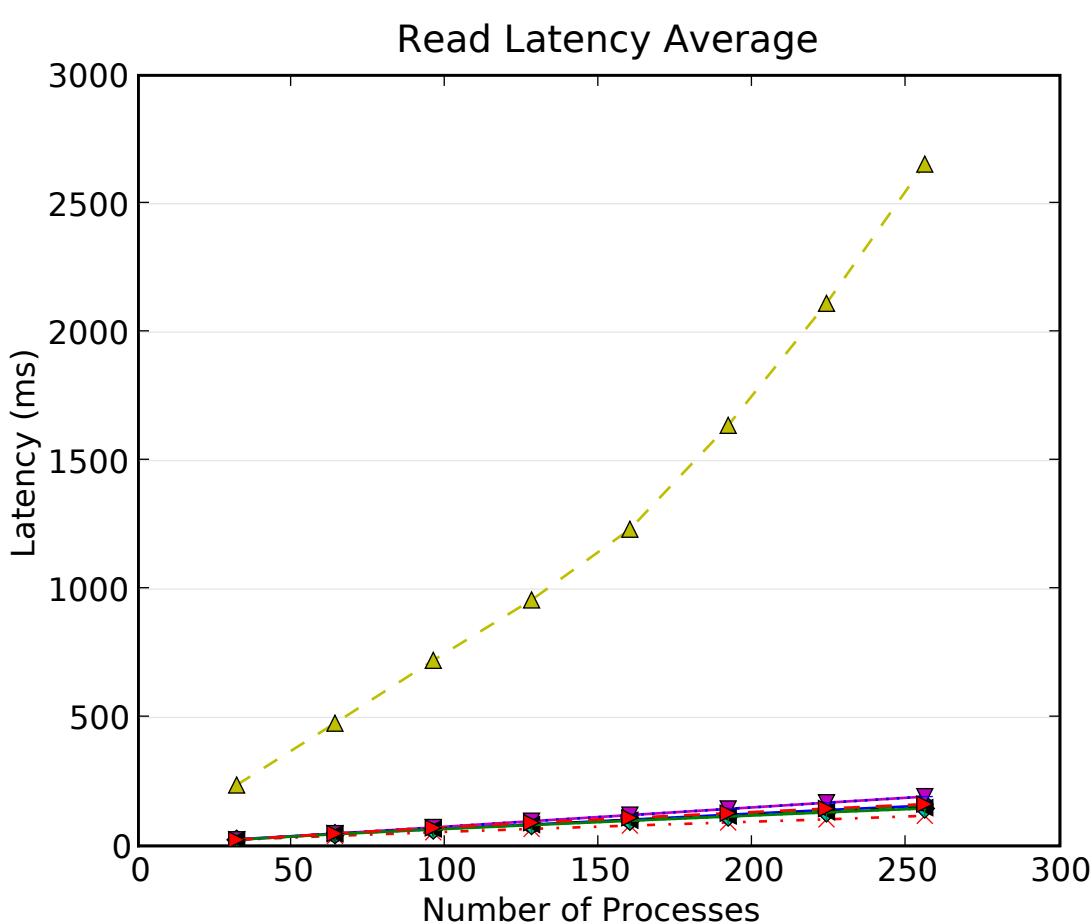
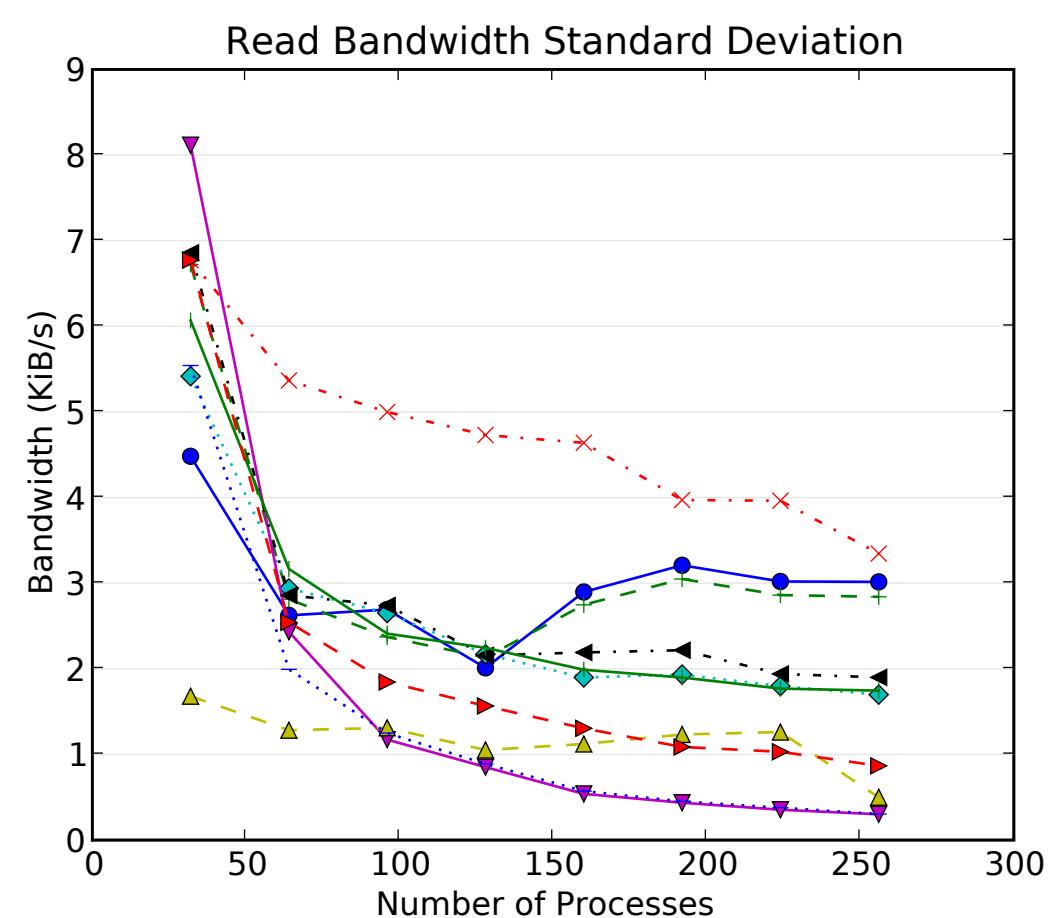
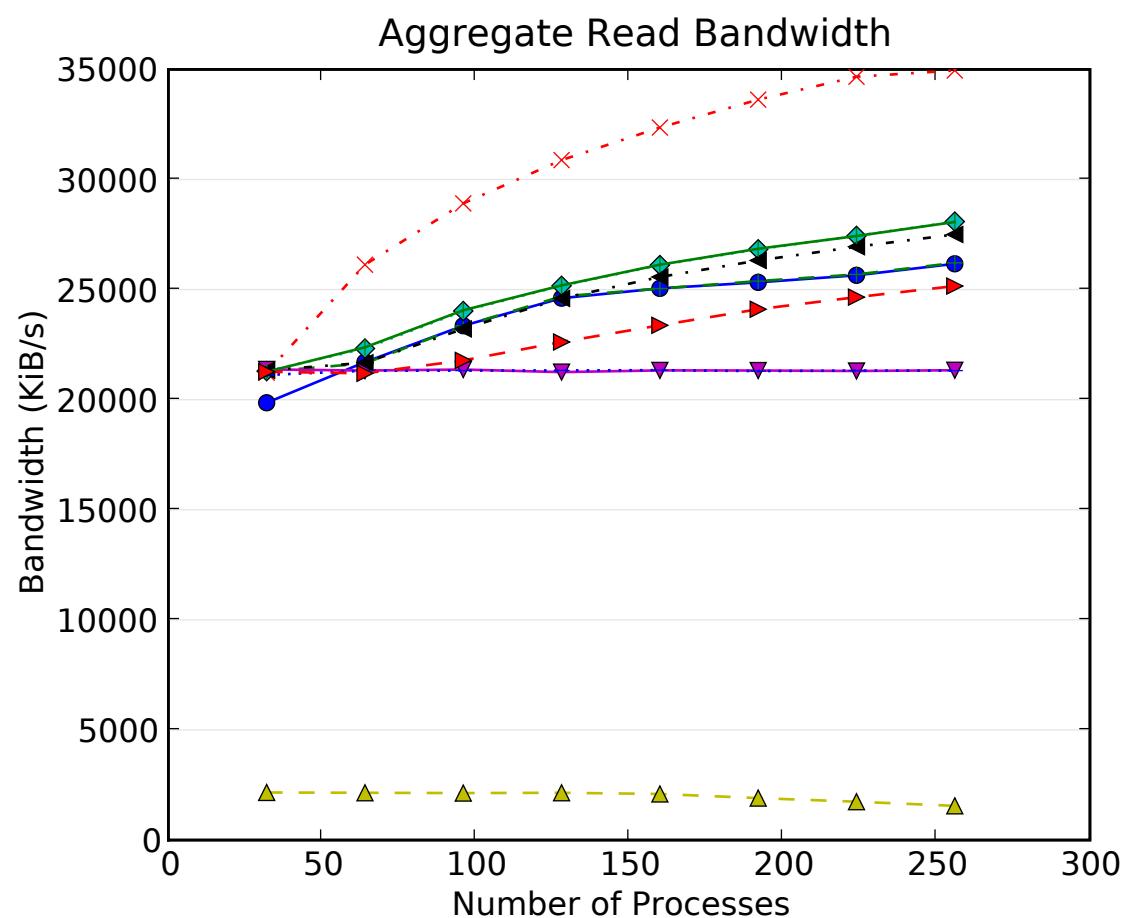
● — as-antic	○ — as-noantic
× — bigq	◆ — vr-scan
▼ — fifo	▲ — cfq-idle
■ — deadline	··· — noop
— — vr-sstf	— — cfq-noidle

# RAID 1+0 (8 disks) - Random readers



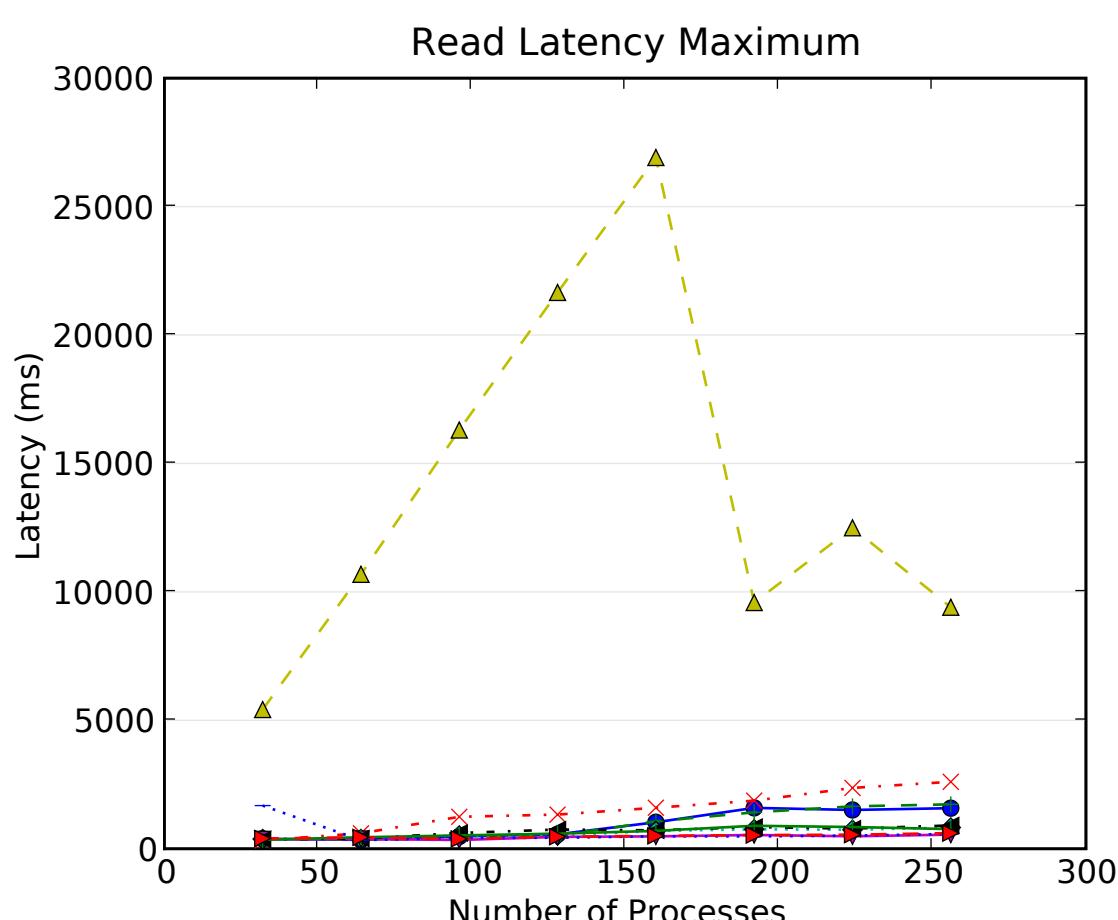
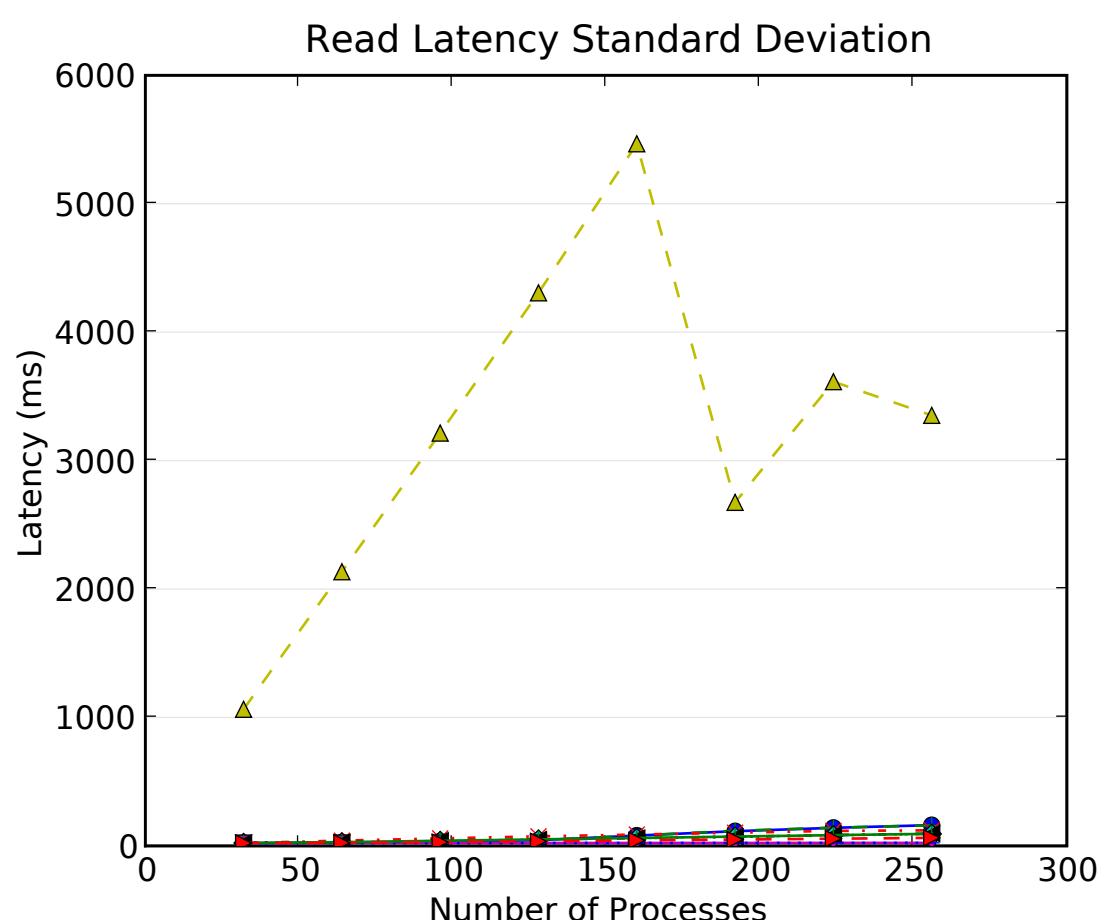
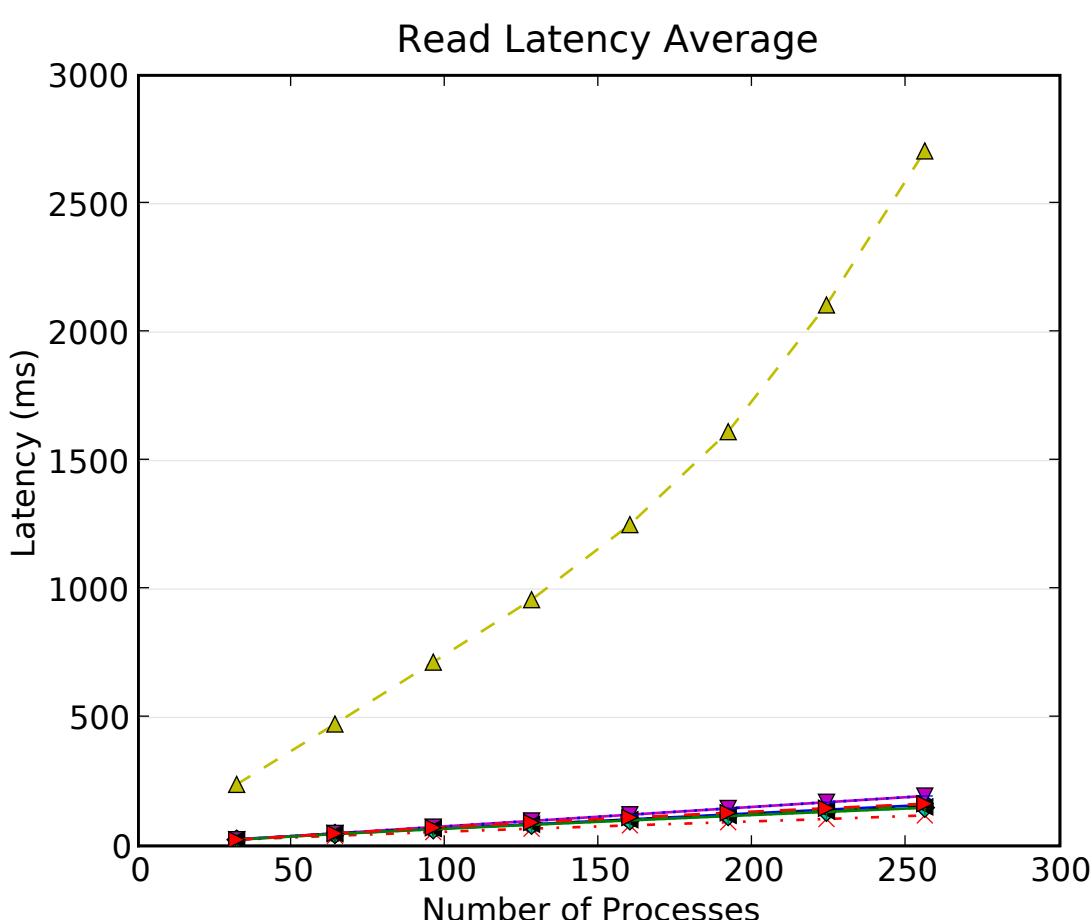
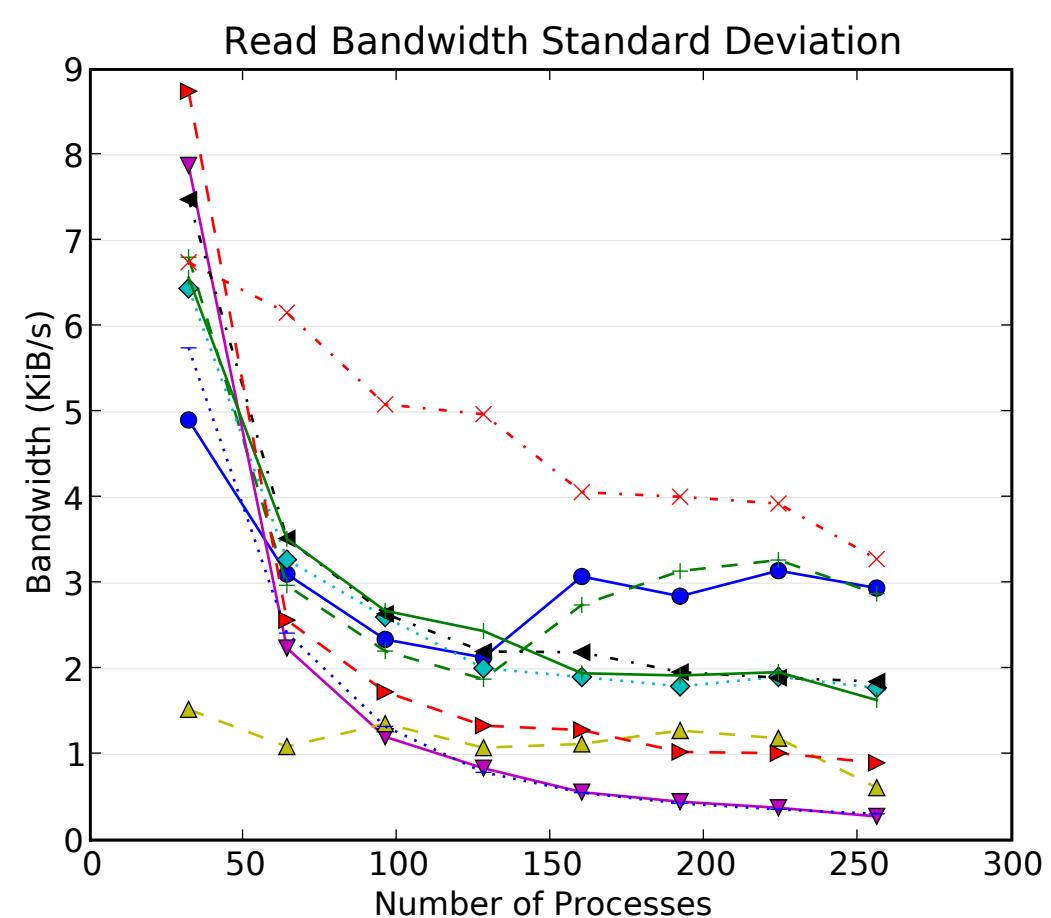
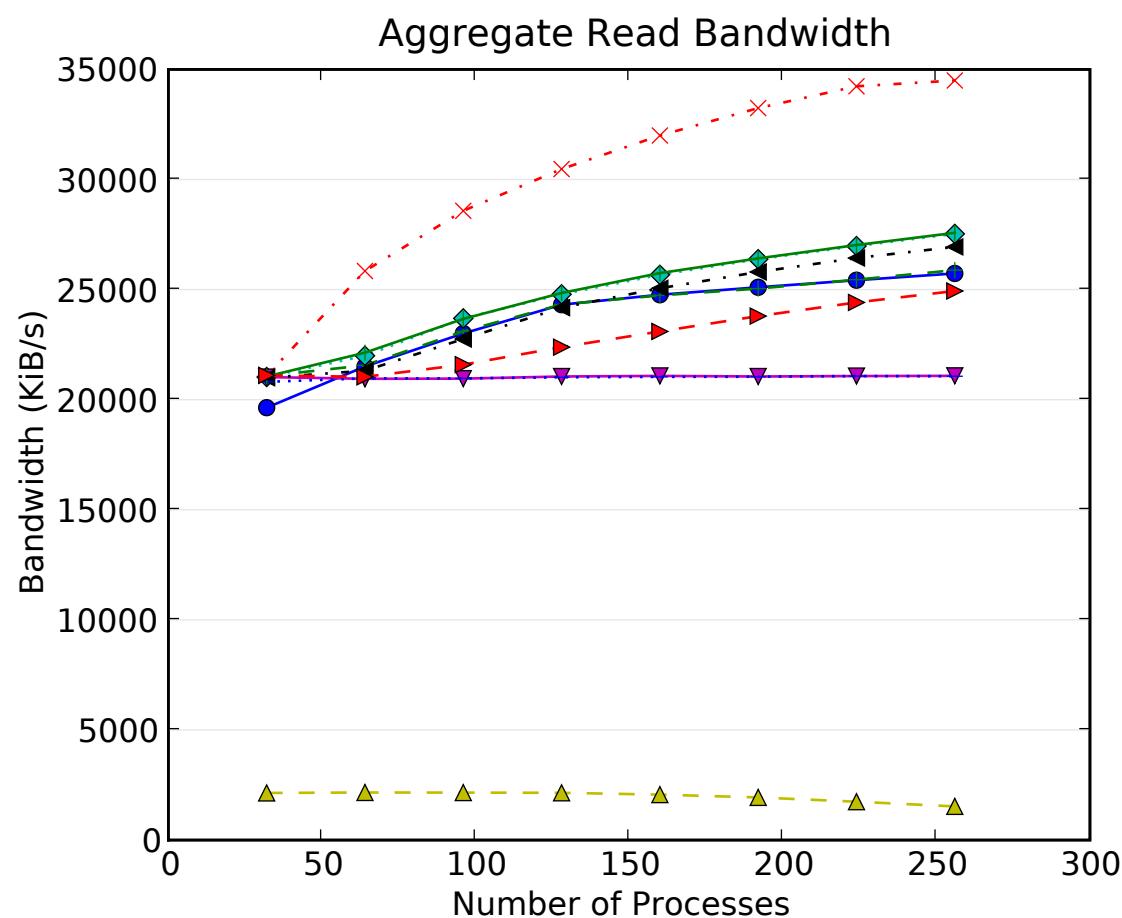
● — as-antic	○ - - as-noantic
✖ - - - bigq	◆ - - vr-scan
▼ - - fifo	▲ - - cfq-idle
■ - - deadline	— noop
— vr-sstf	— cfq-noidle

# RAID 5 - Random readers



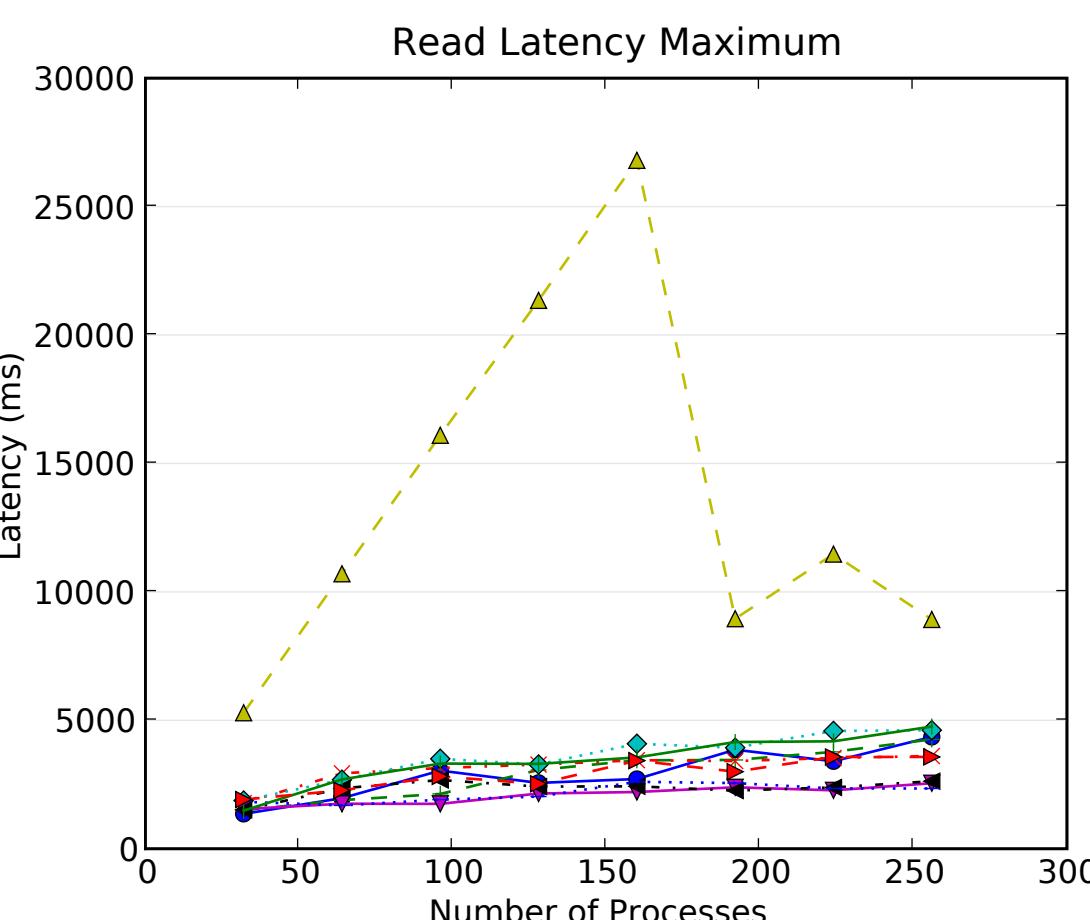
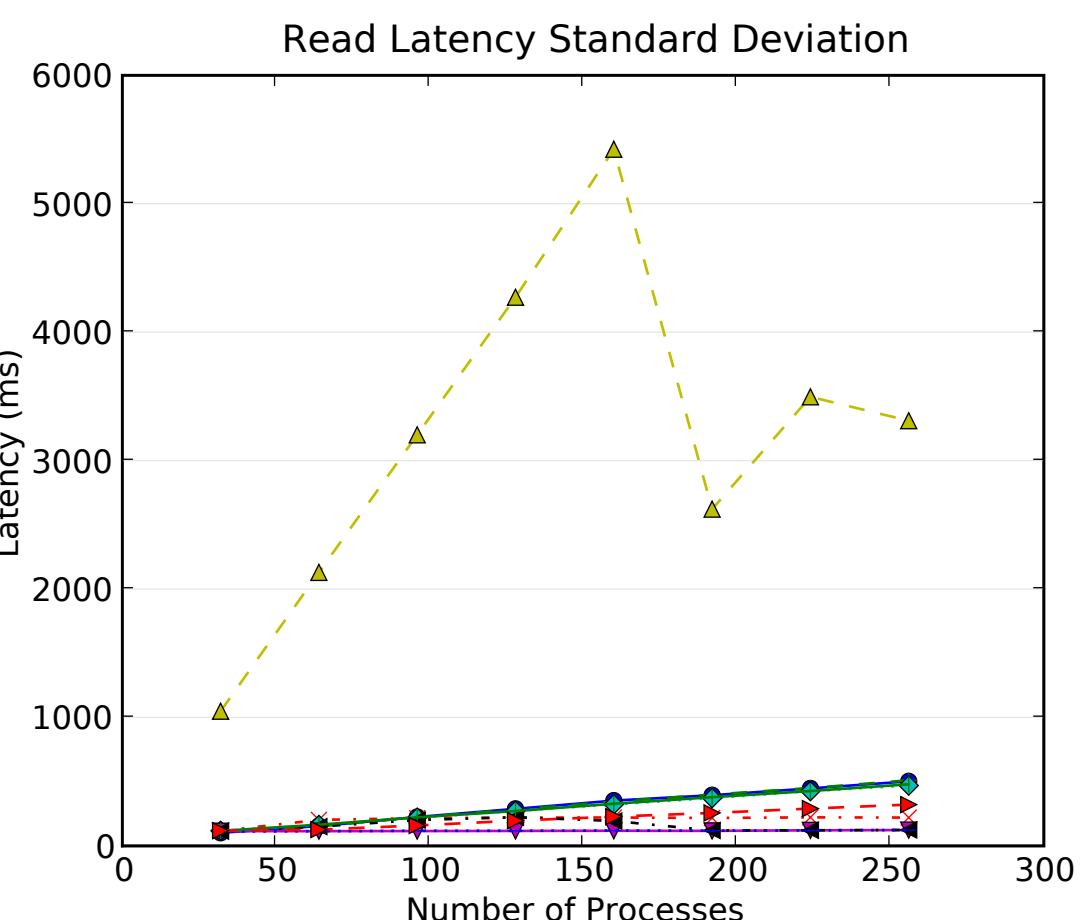
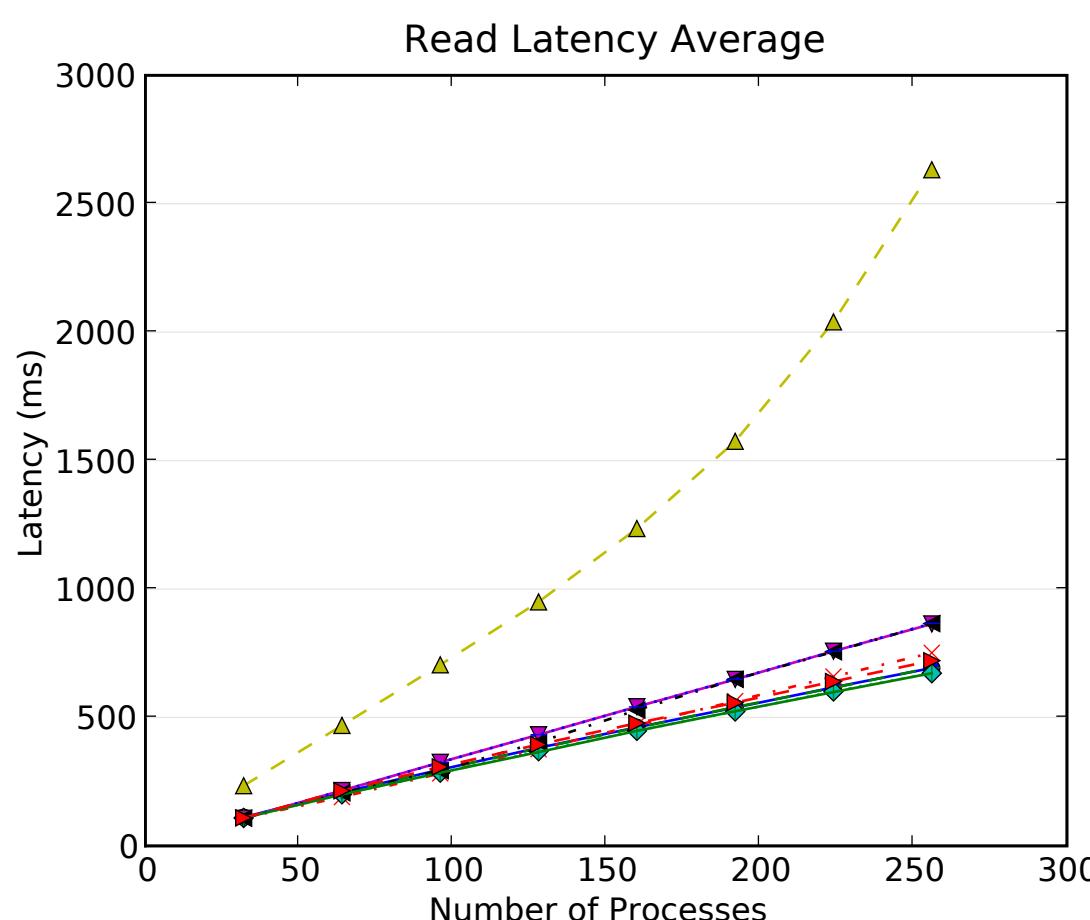
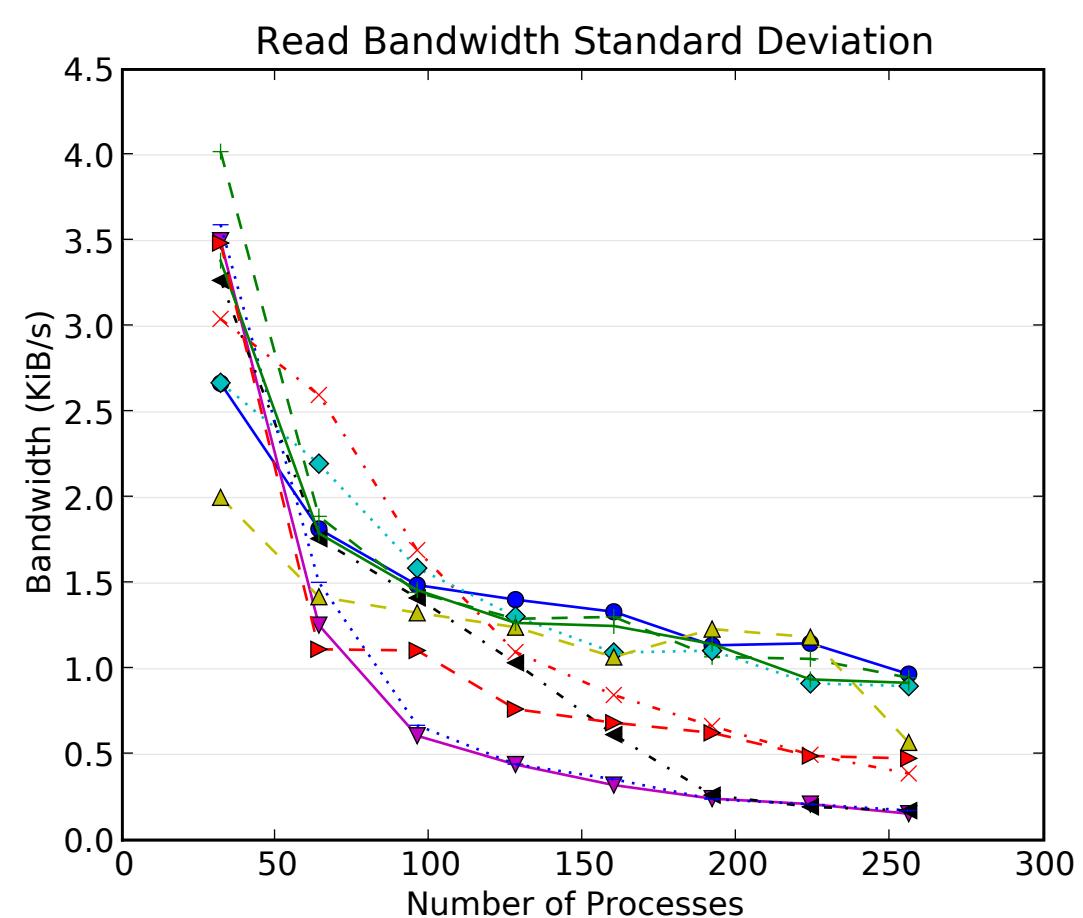
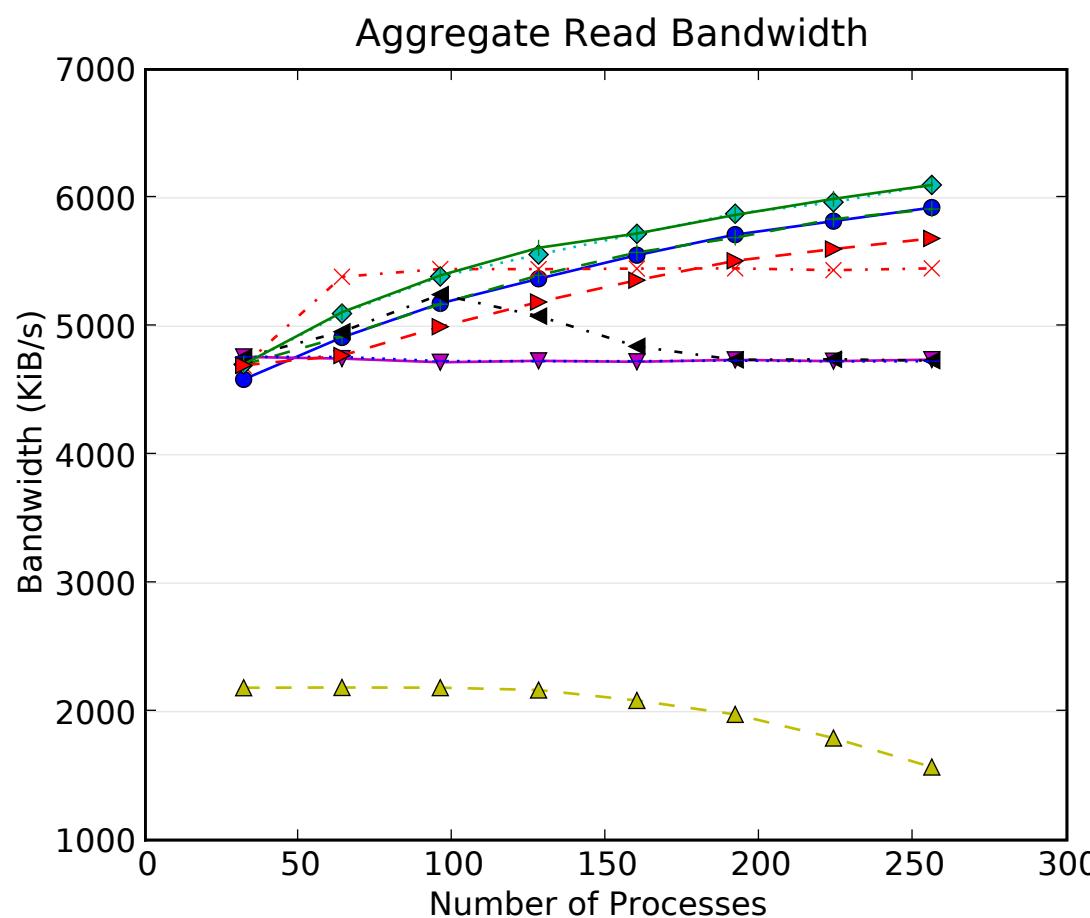
● — as-antic	— + — as-noantic
✖ — bigq	··◆·· vr-scan
▼ — fifo	△ — cfq-idle
▲ — deadline	··· ··· noop
— — vr-sstf	— — cfq-noidle

# RAID 6 - Random readers



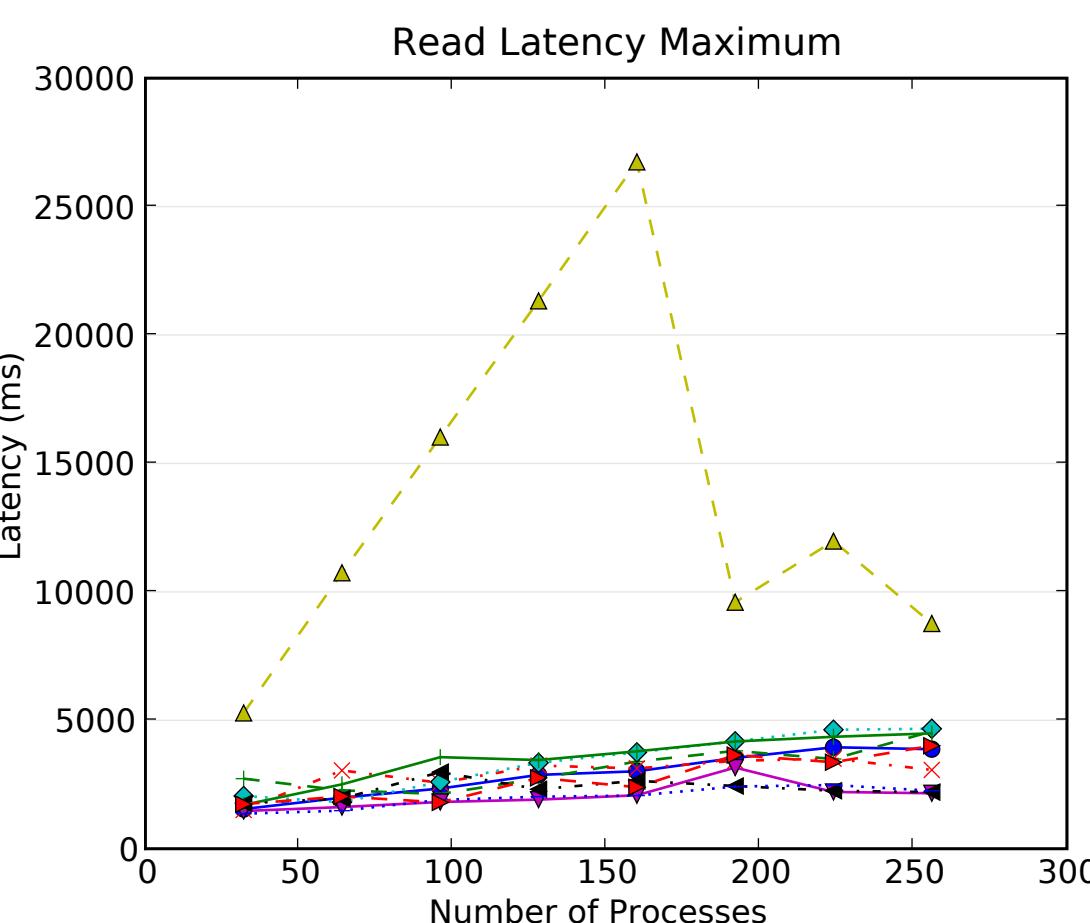
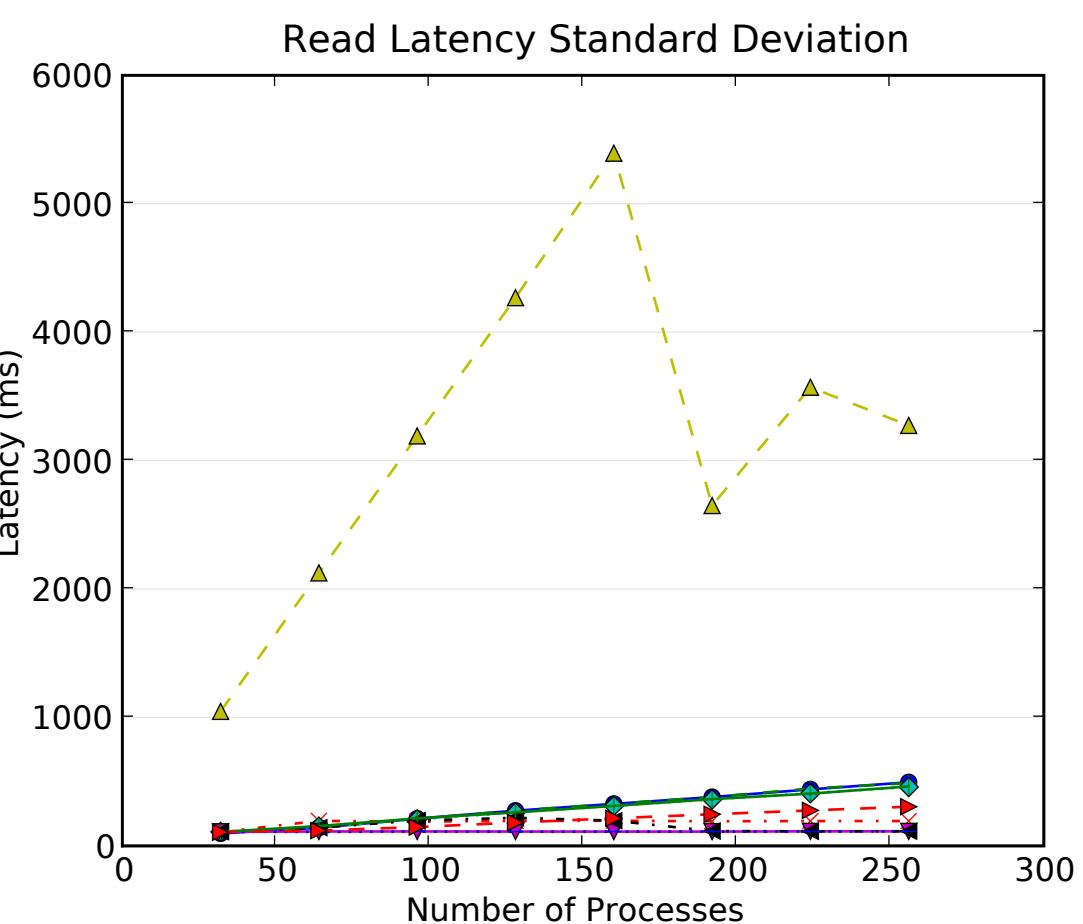
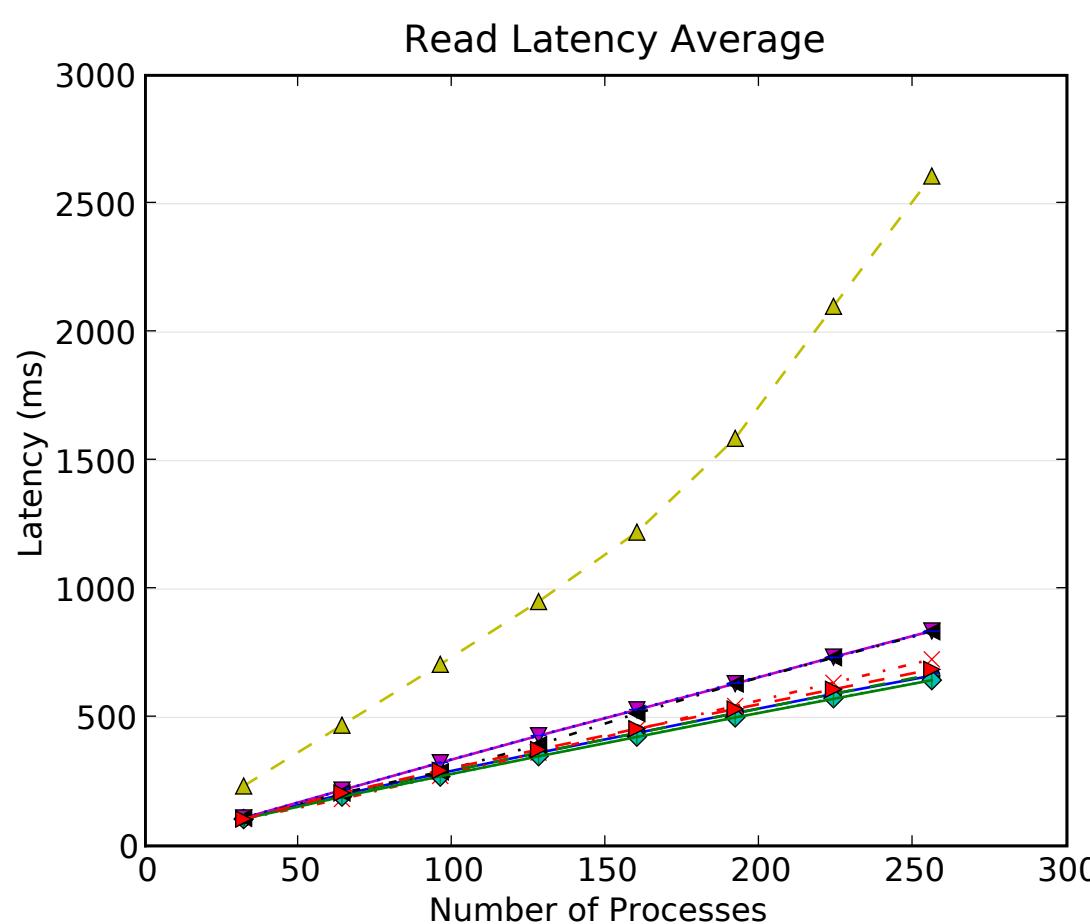
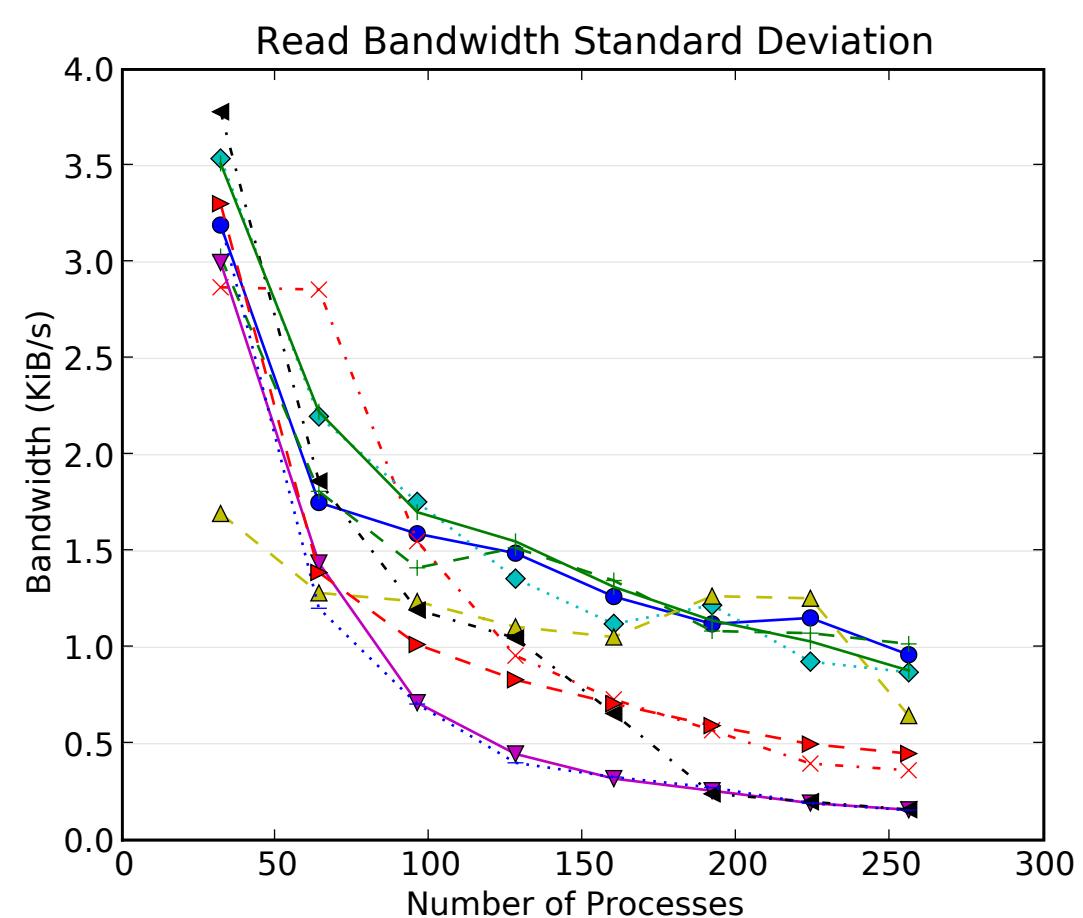
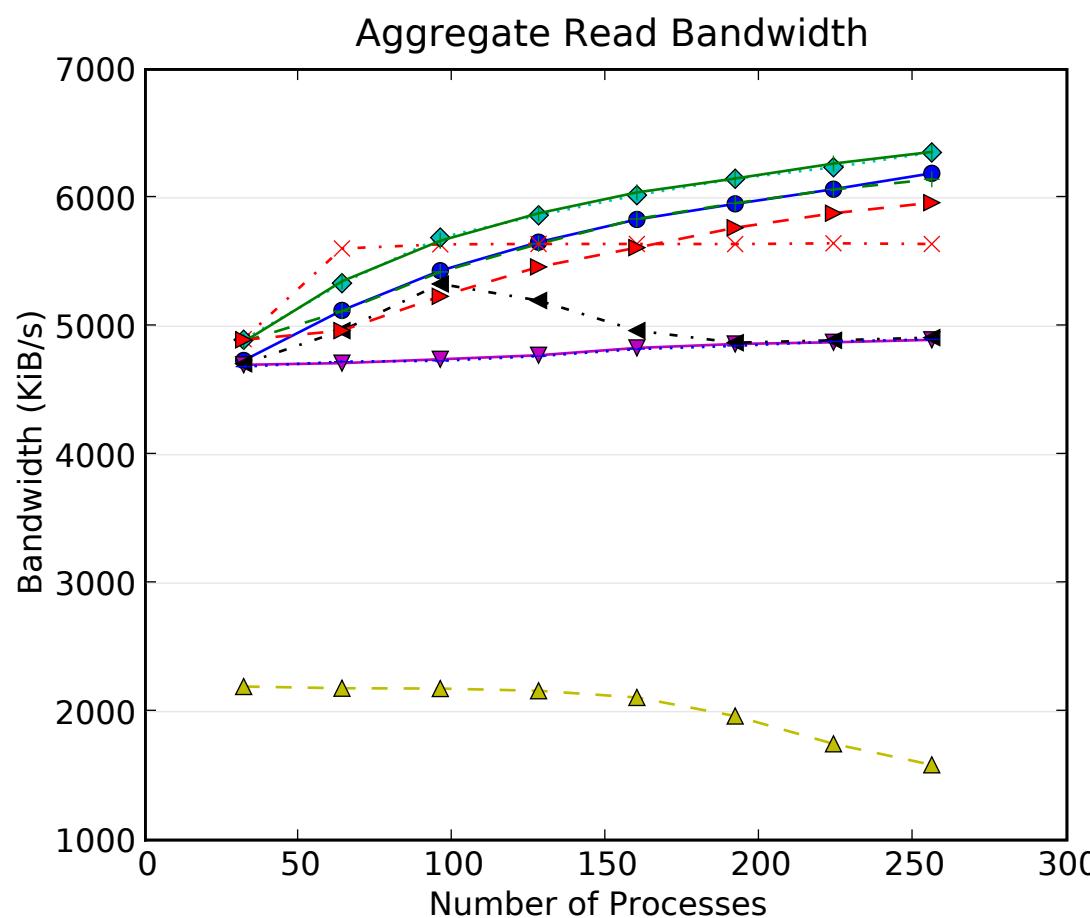
● — as-antic	— + as-noantic
— x bigq	— ◆ vr-scan
— ▼ fifo	— ▲ cfq-idle
— ▨ deadline	— · noop
— — vr-sstf	— ▶ cfq-noidle

# Single disk (RAID controller) - Random readers



● — as-antic	— as-noantic
× — bigq	◆ — vr-scan
▼ — fifo	▲ — cfq-idle
◀ — deadline	— noop
— vr-sstf	— cfq-noidle

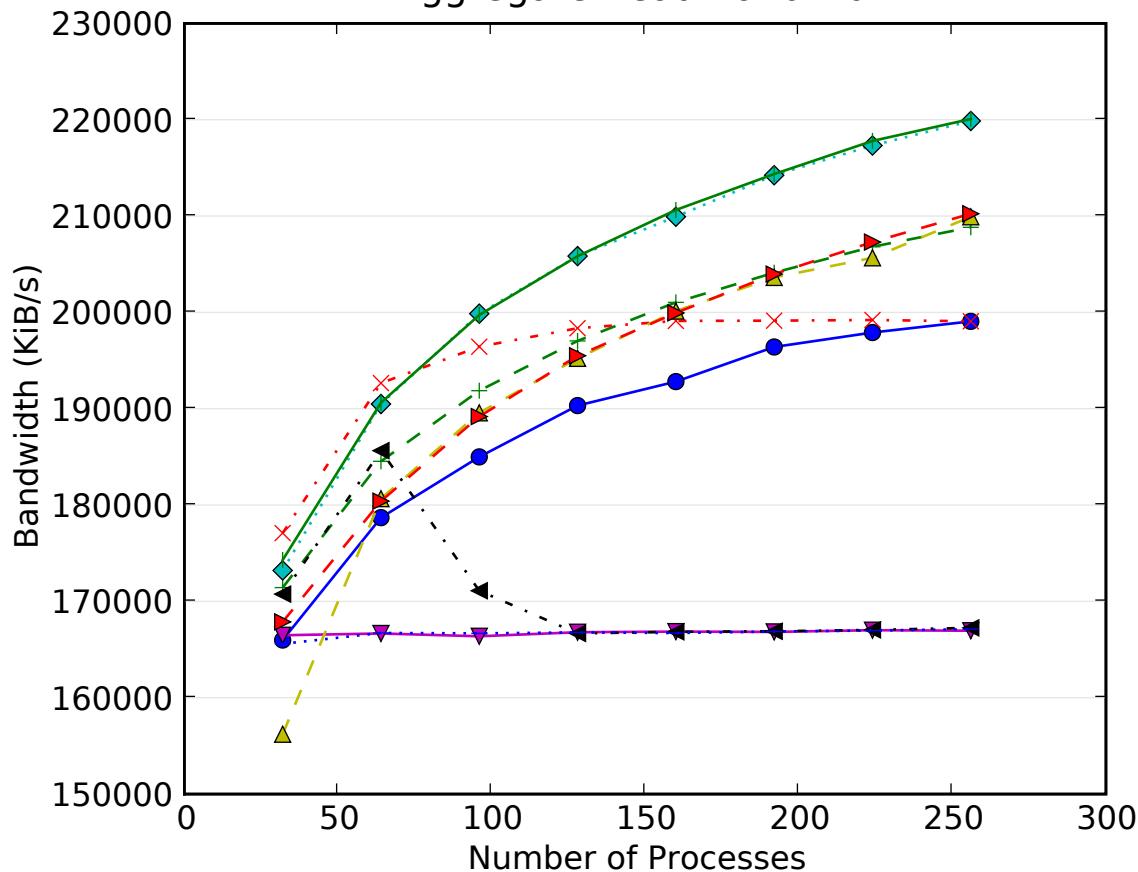
# Single disk (host controller) - Random readers



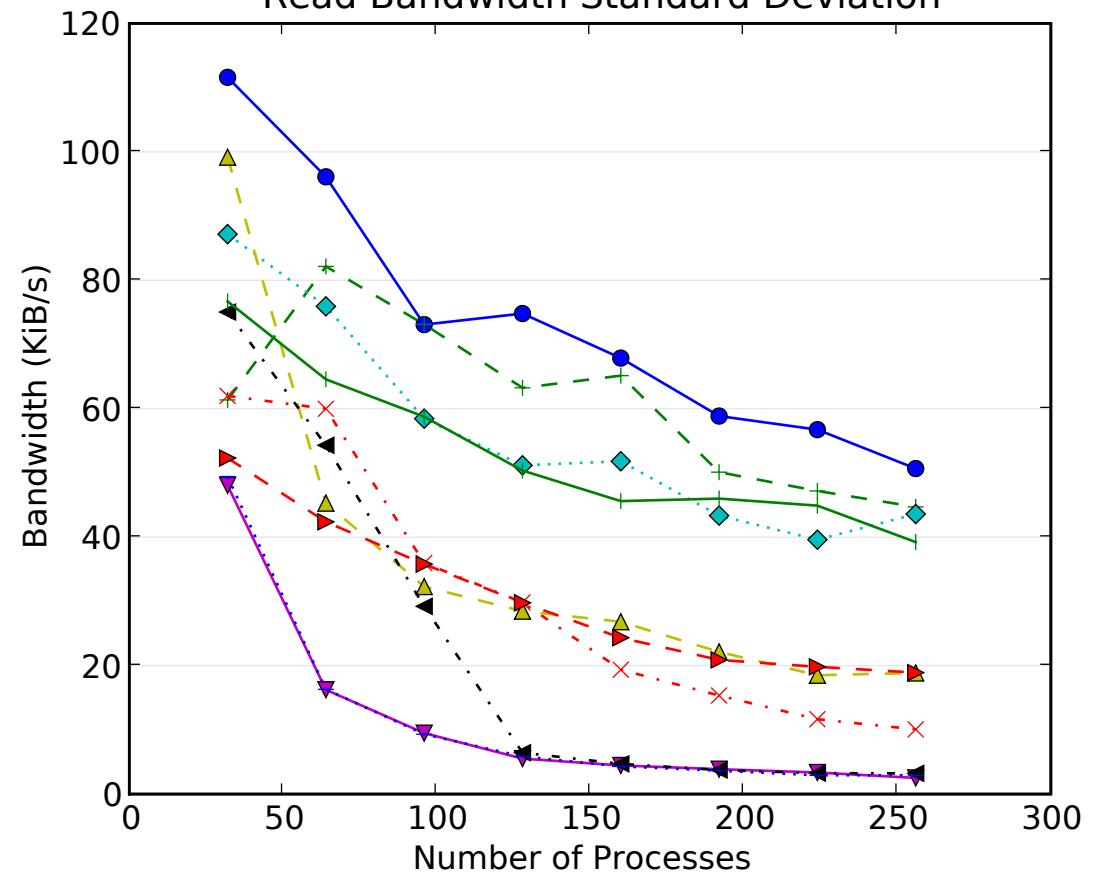
● - - as-antic	○ - - as-noantic
✖ - - bigq	◆ - - vr-scan
▼ - - fifo	▲ - - cfq-idle
■ - - deadline	● - - noop
— vr-sstf	— cfq-noidle

# RAID 0 - Sequential readers

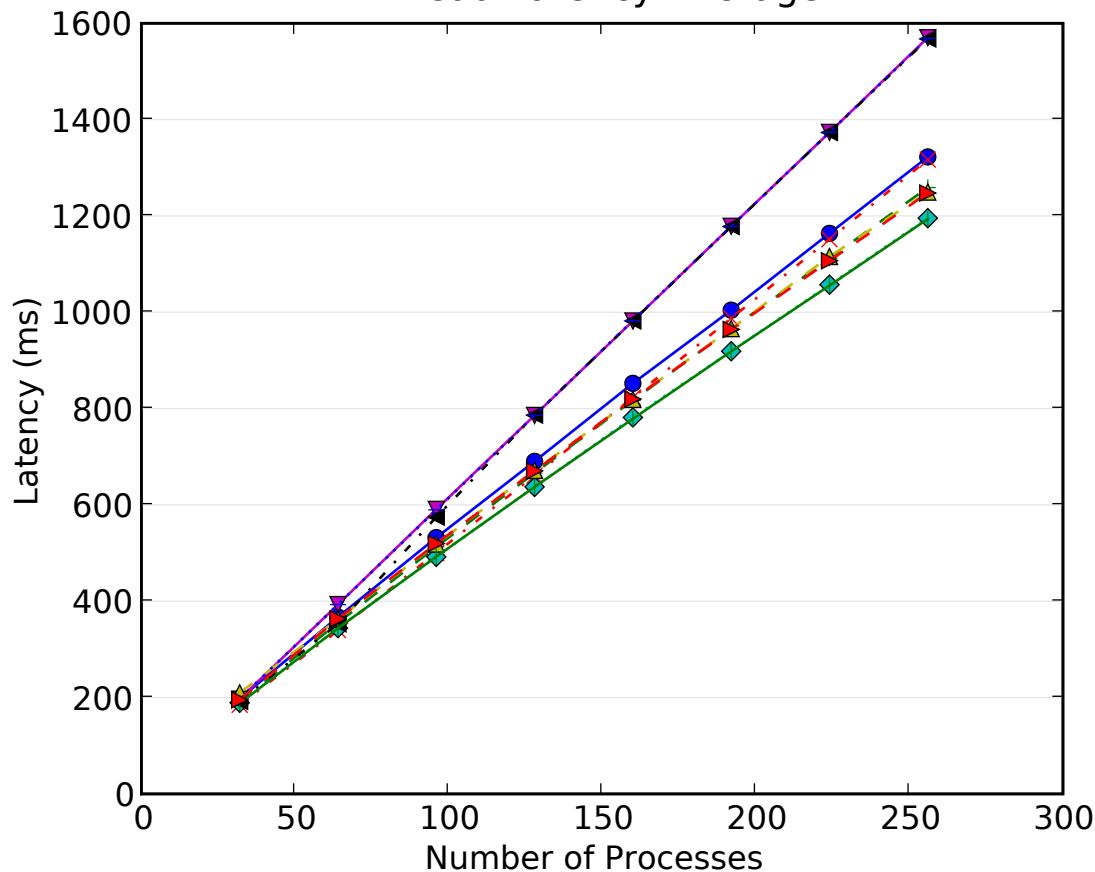
Aggregate Read Bandwidth



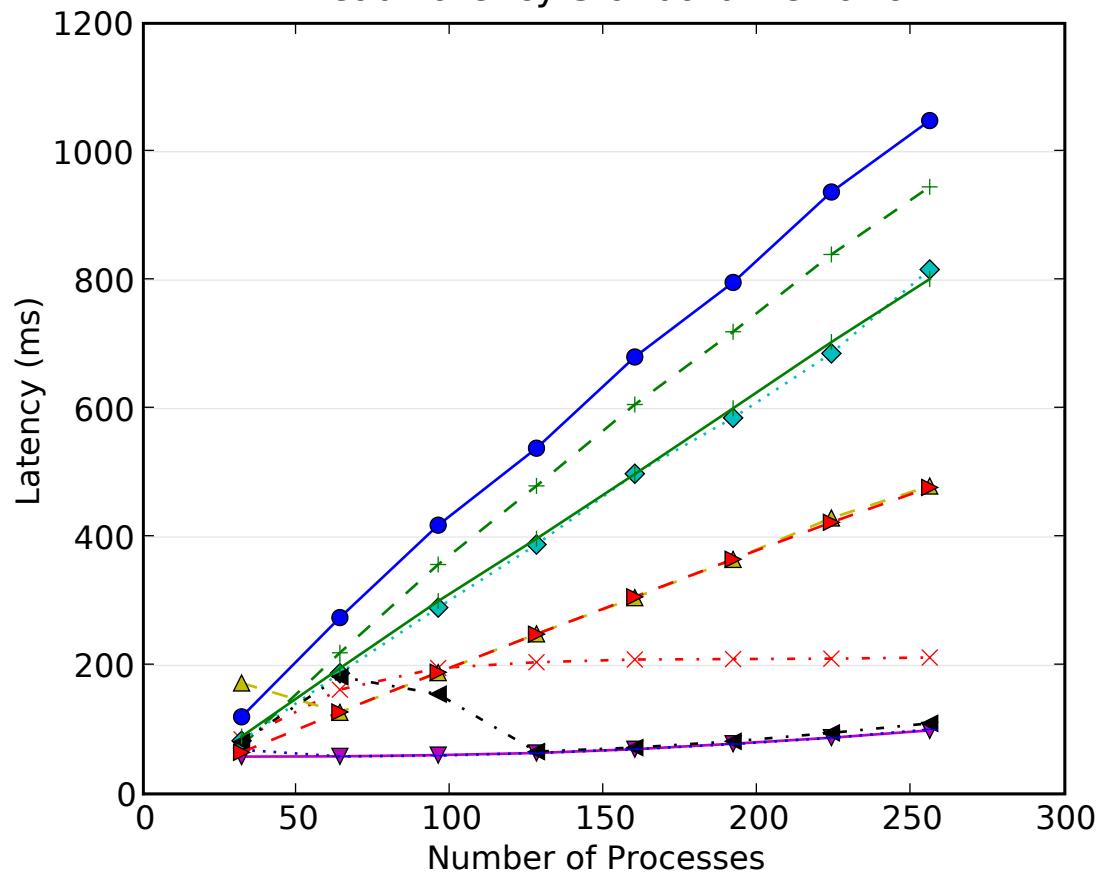
Read Bandwidth Standard Deviation



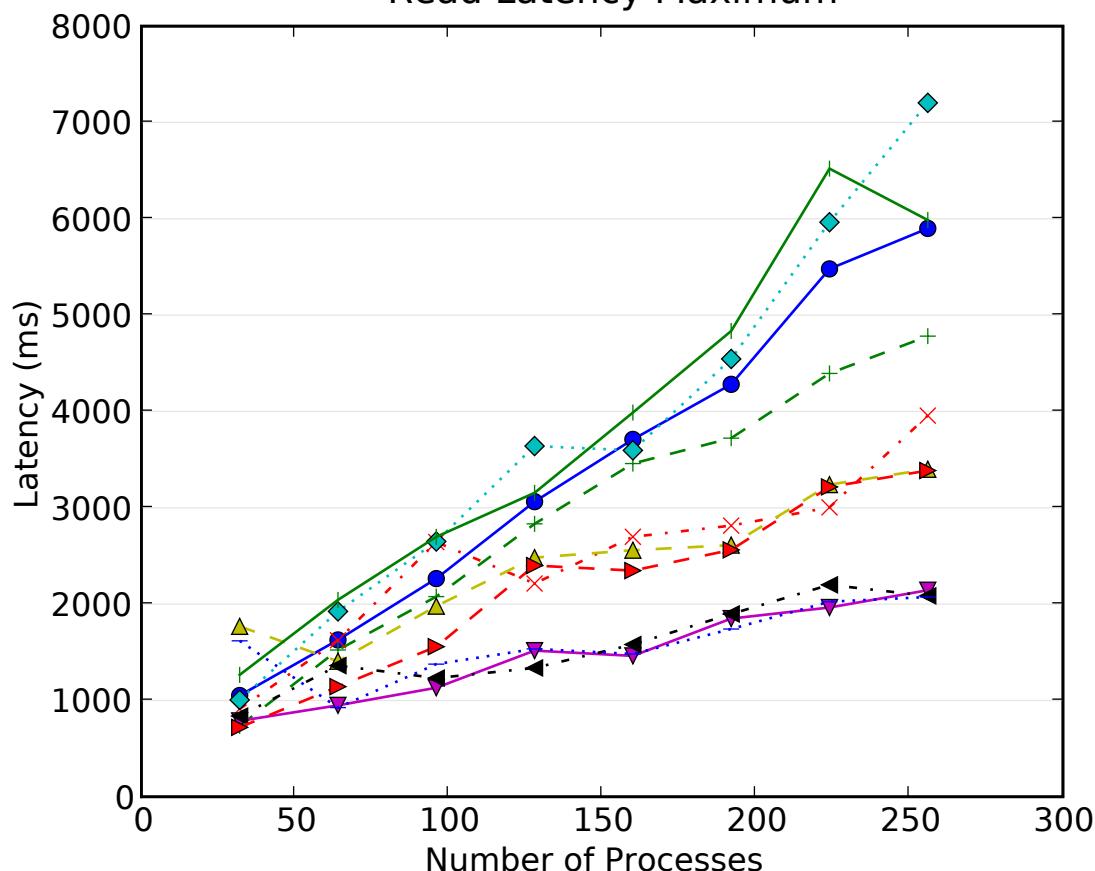
Read Latency Average



Read Latency Standard Deviation



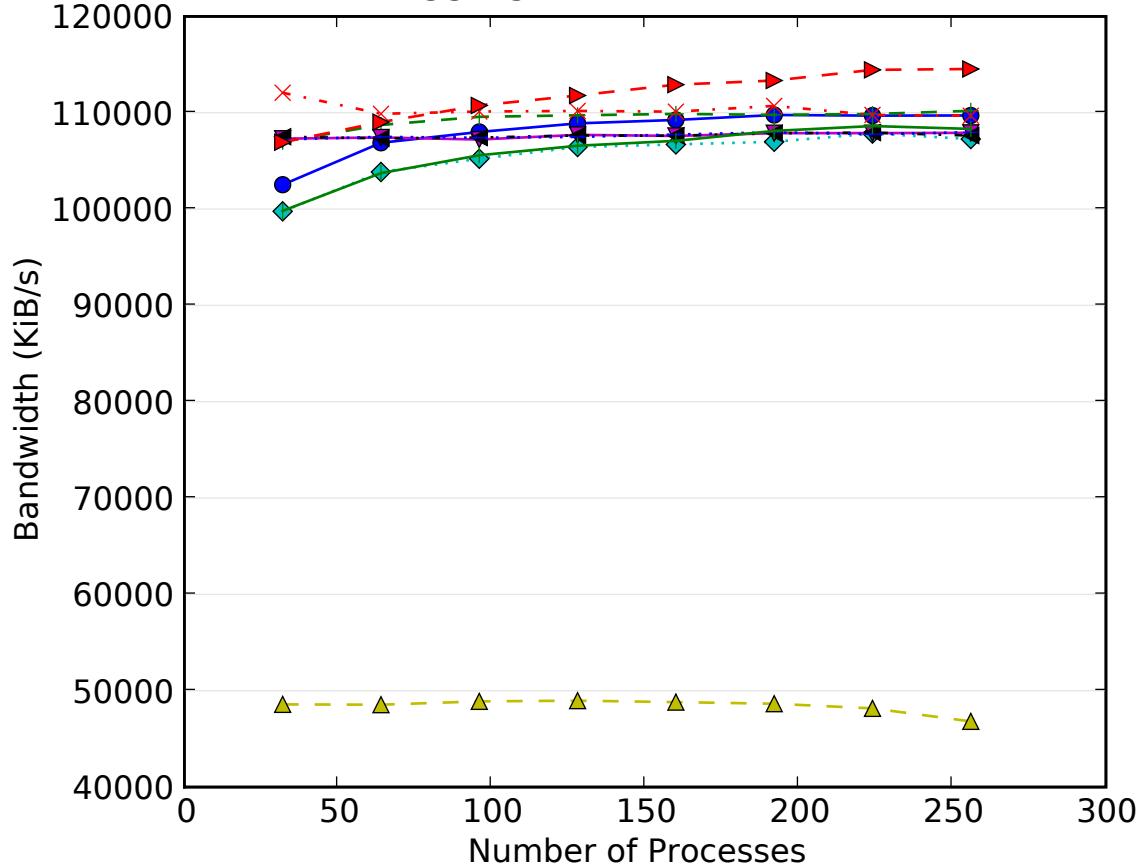
Read Latency Maximum



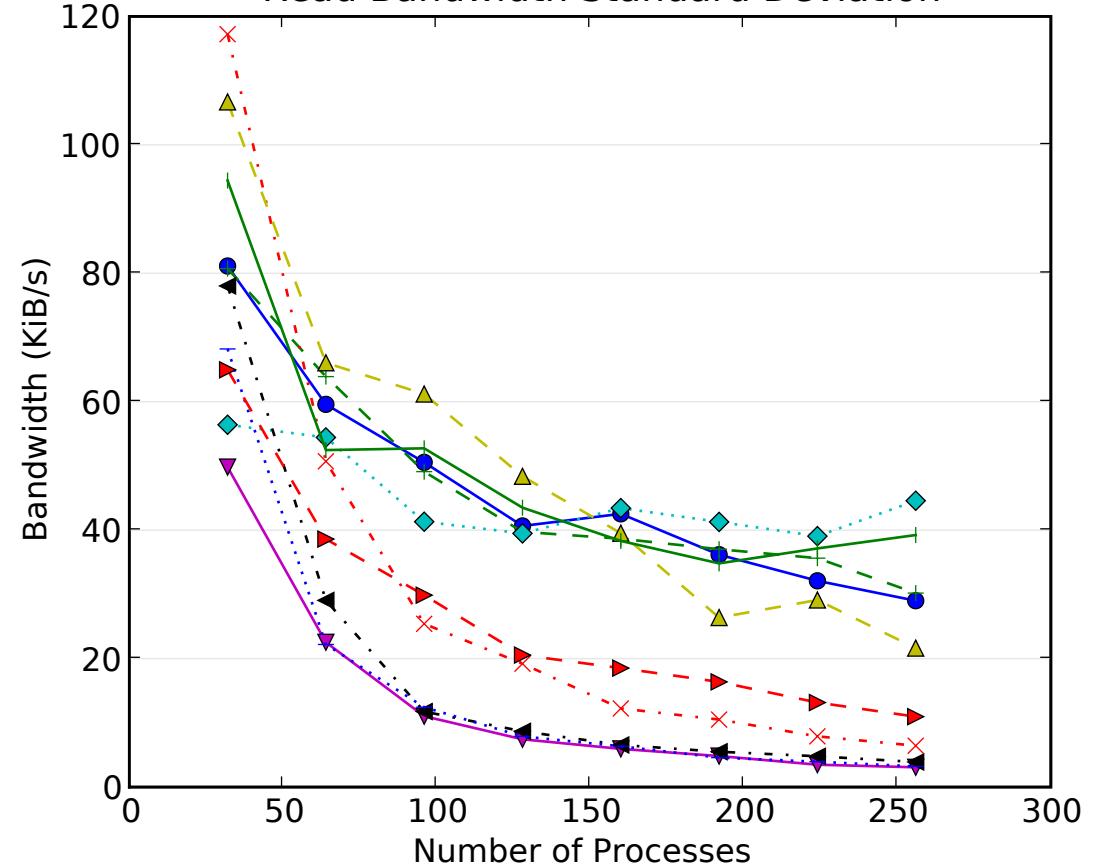
● — as-antic	● - - as-noantic
× - - bigq	◆ - - vr-scan
▼ - - fifo	▲ - - cfq-idle
■ - - deadline	- - noop
— vr-sstf	— cfq-noidle

# RAID 1+0 (2 disks) - Sequential readers

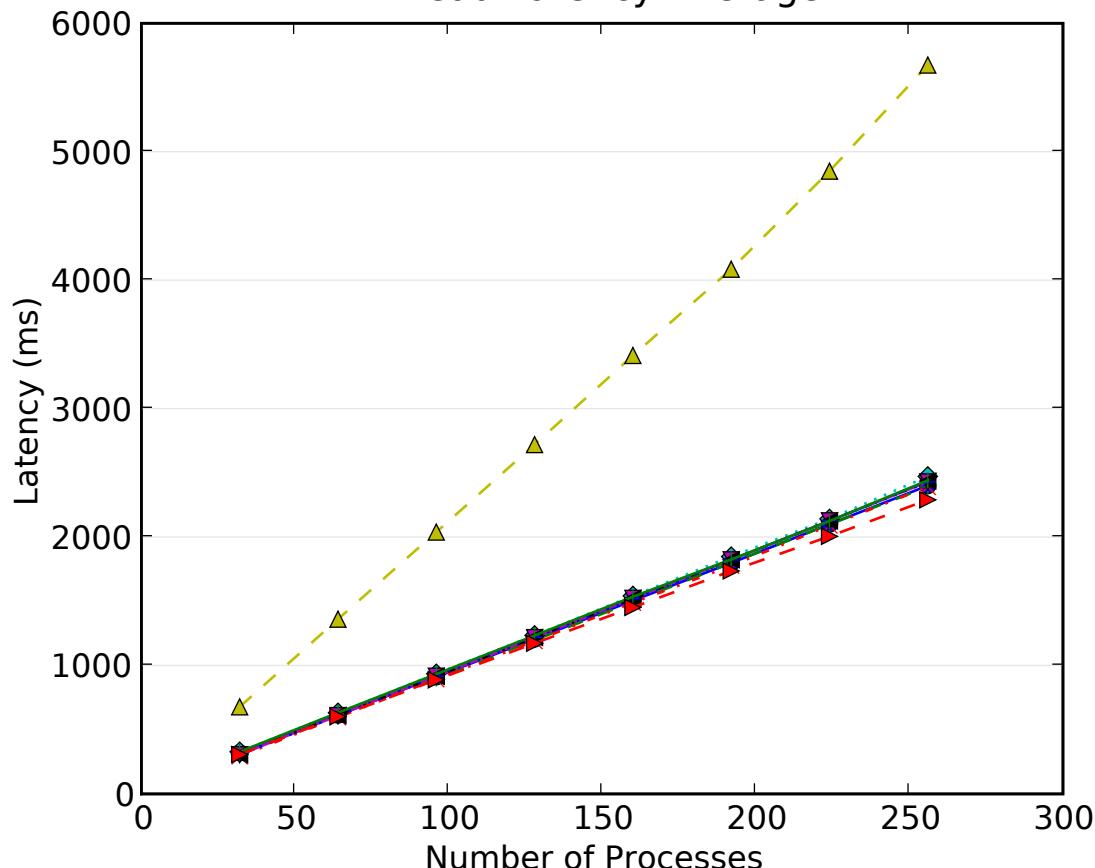
Aggregate Read Bandwidth



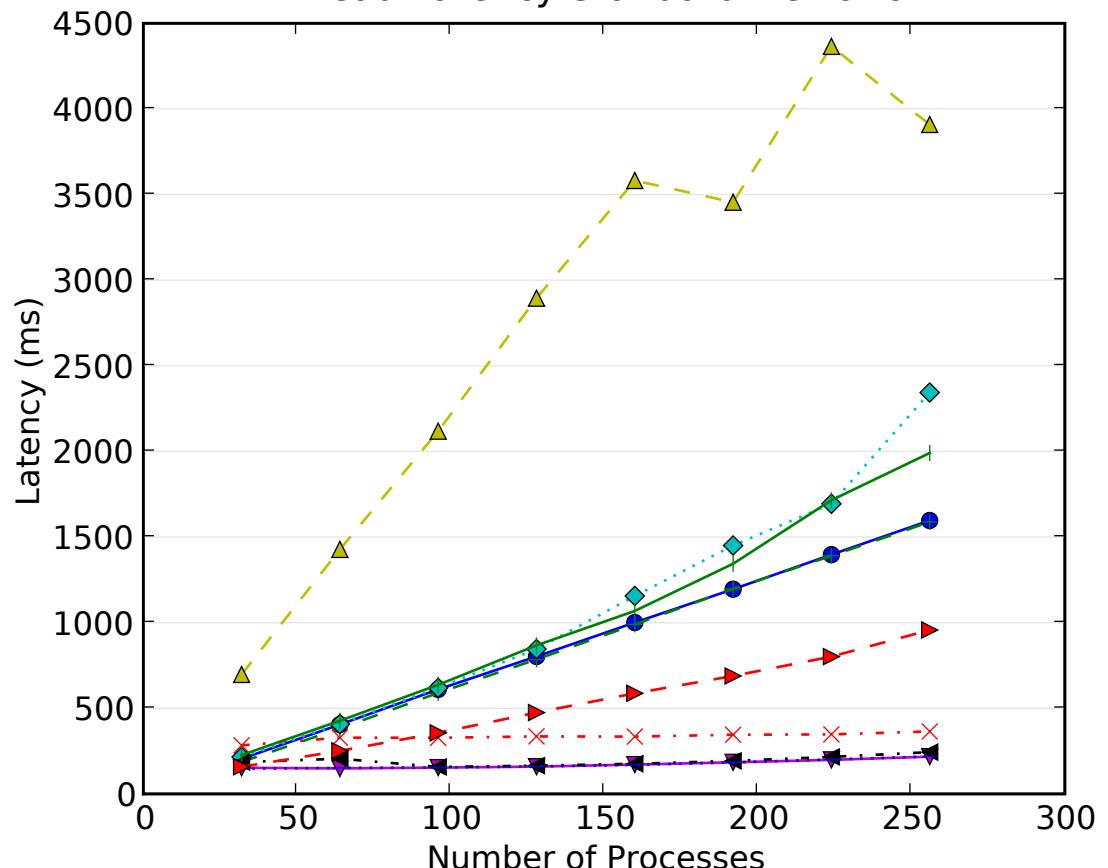
Read Bandwidth Standard Deviation



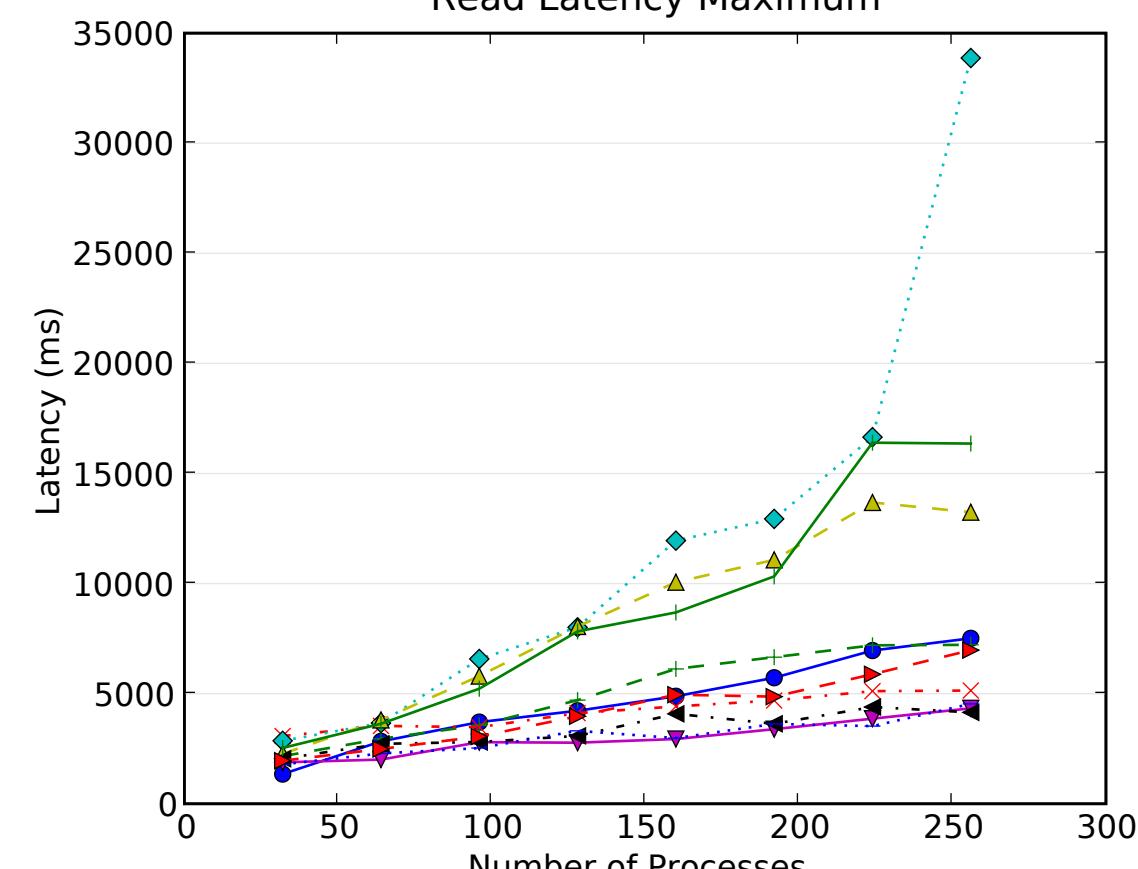
Read Latency Average



Read Latency Standard Deviation



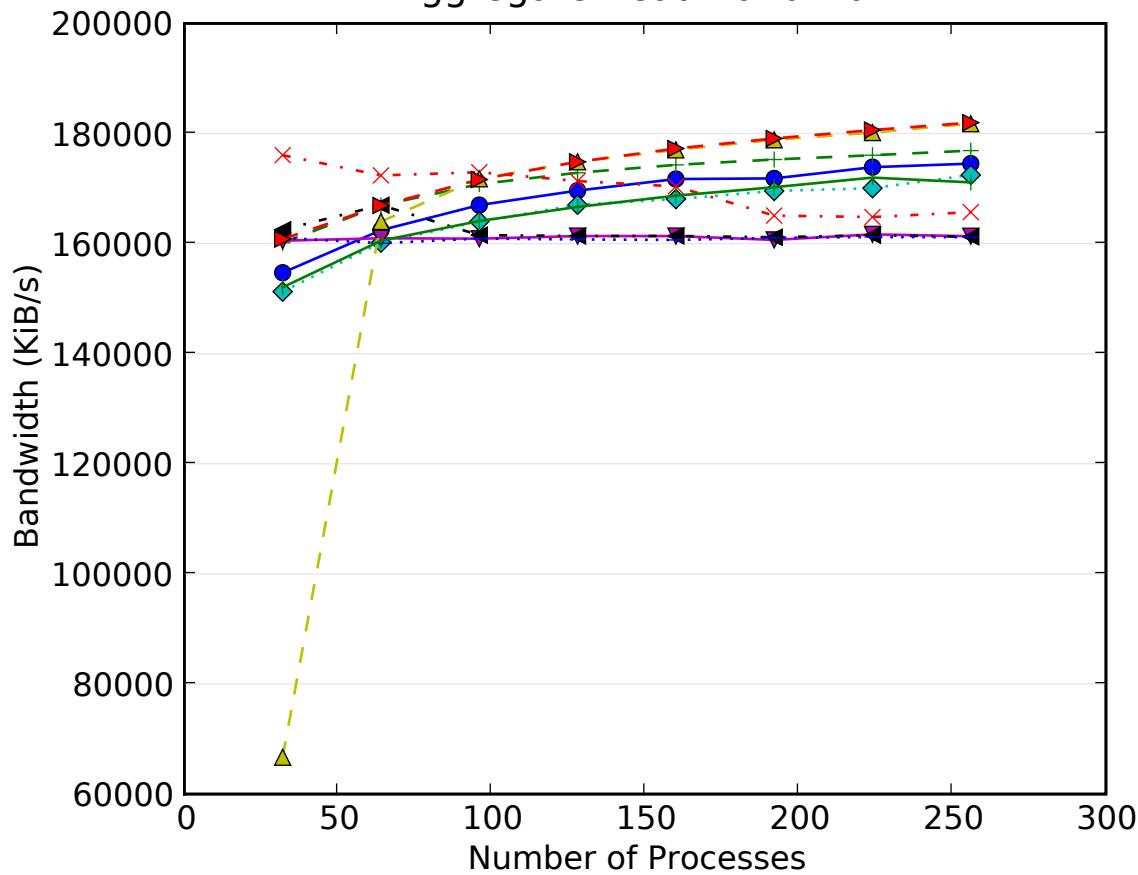
Read Latency Maximum



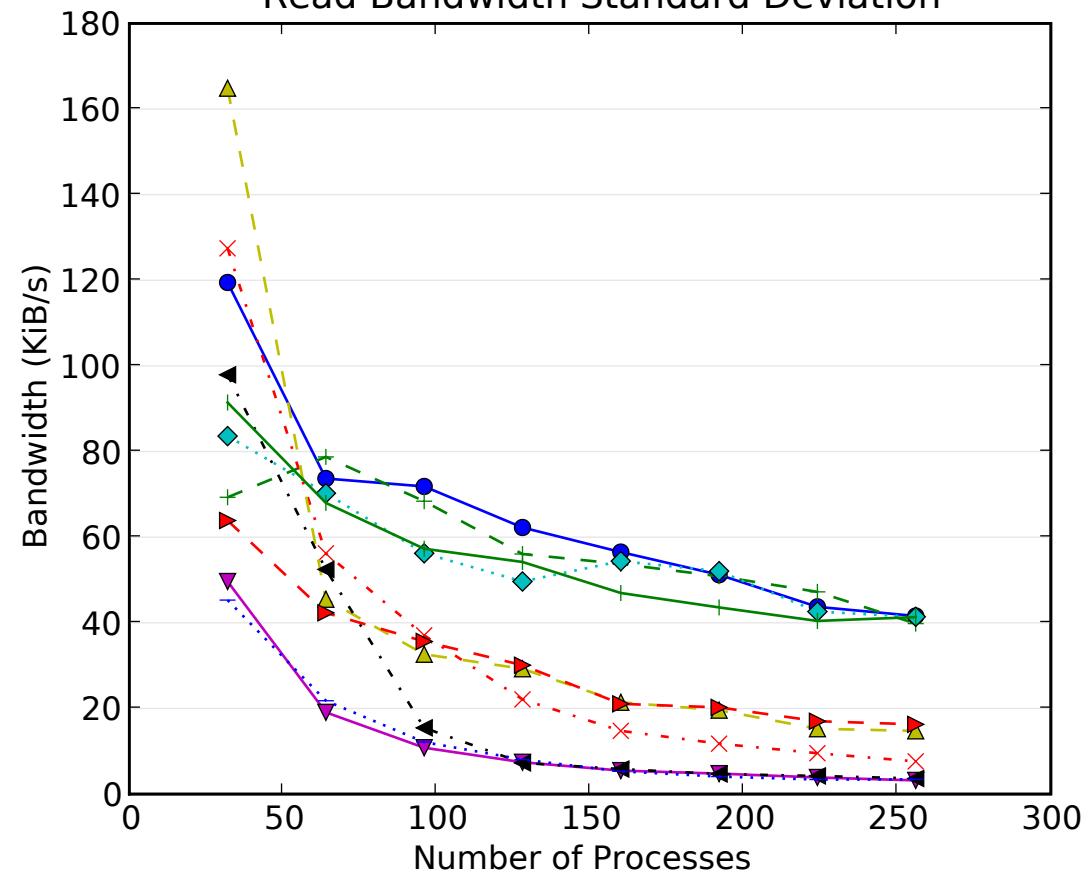
as-antic	as-noantic
+	+
bigq	bigq
vr-scan	vr-scan
fifo	fifo
cfq-idle	cfq-idle
deadline	deadline
noop	noop
vr-sstf	vr-sstf
cfq-noidle	cfq-noidle

# RAID 1+0 (4 disks) - Sequential readers

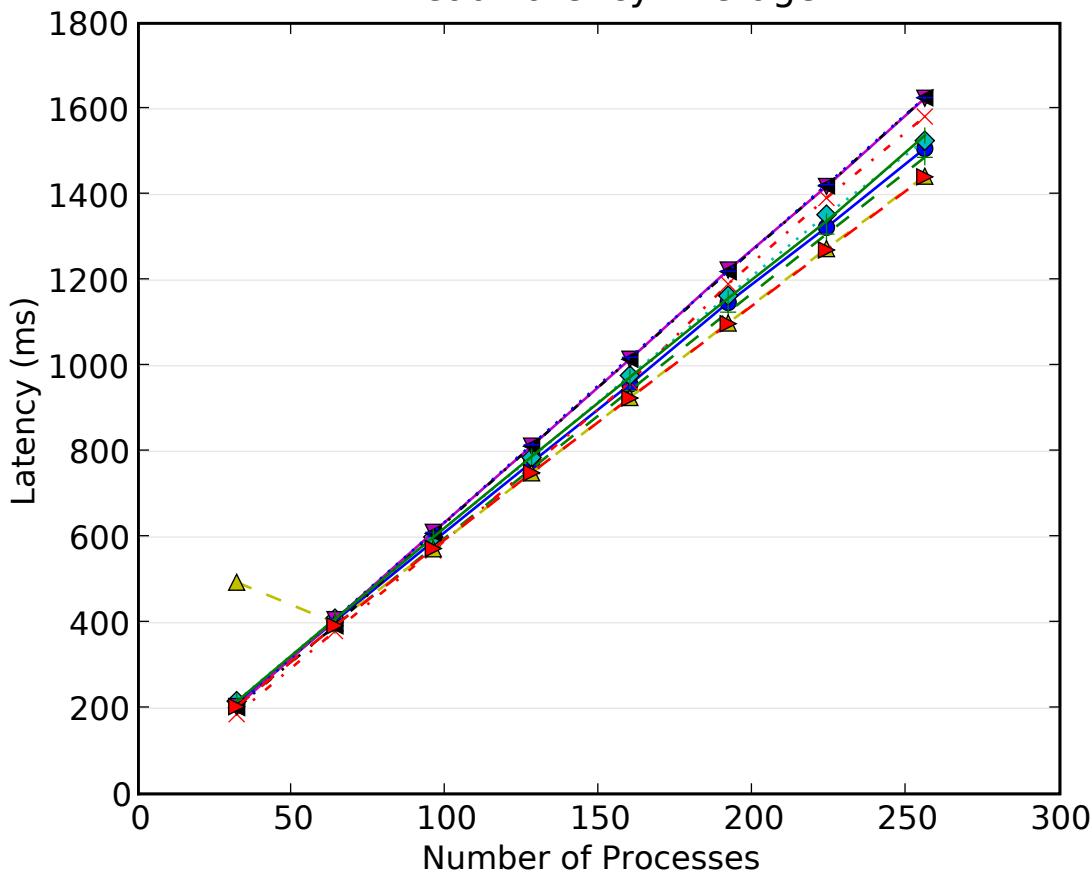
Aggregate Read Bandwidth



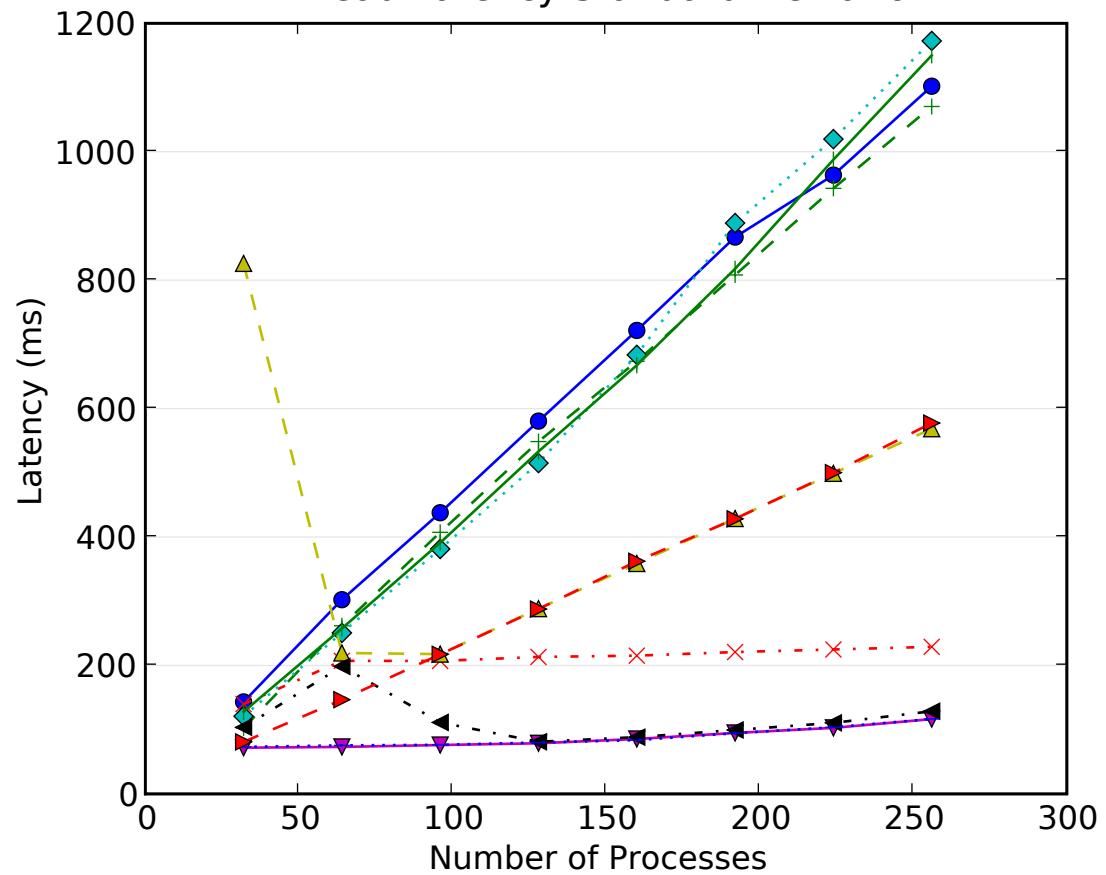
Read Bandwidth Standard Deviation



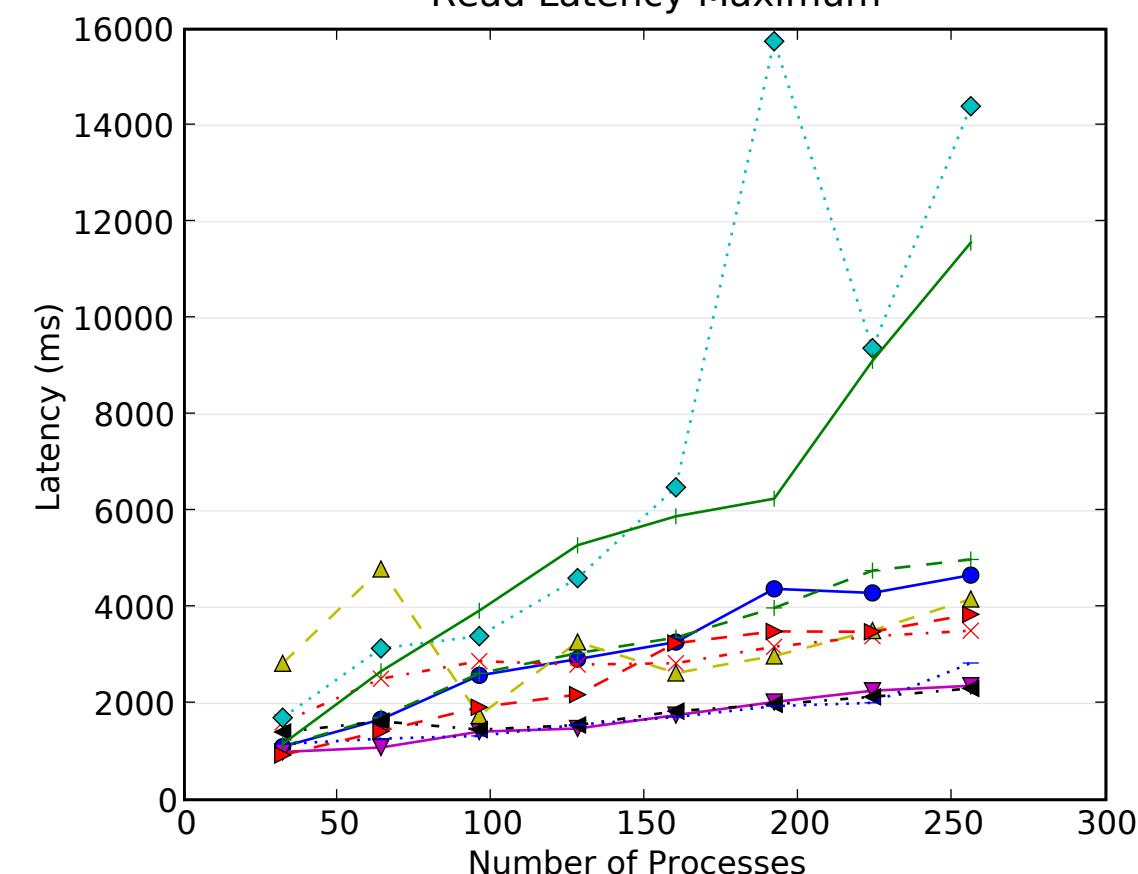
Read Latency Average



Read Latency Standard Deviation



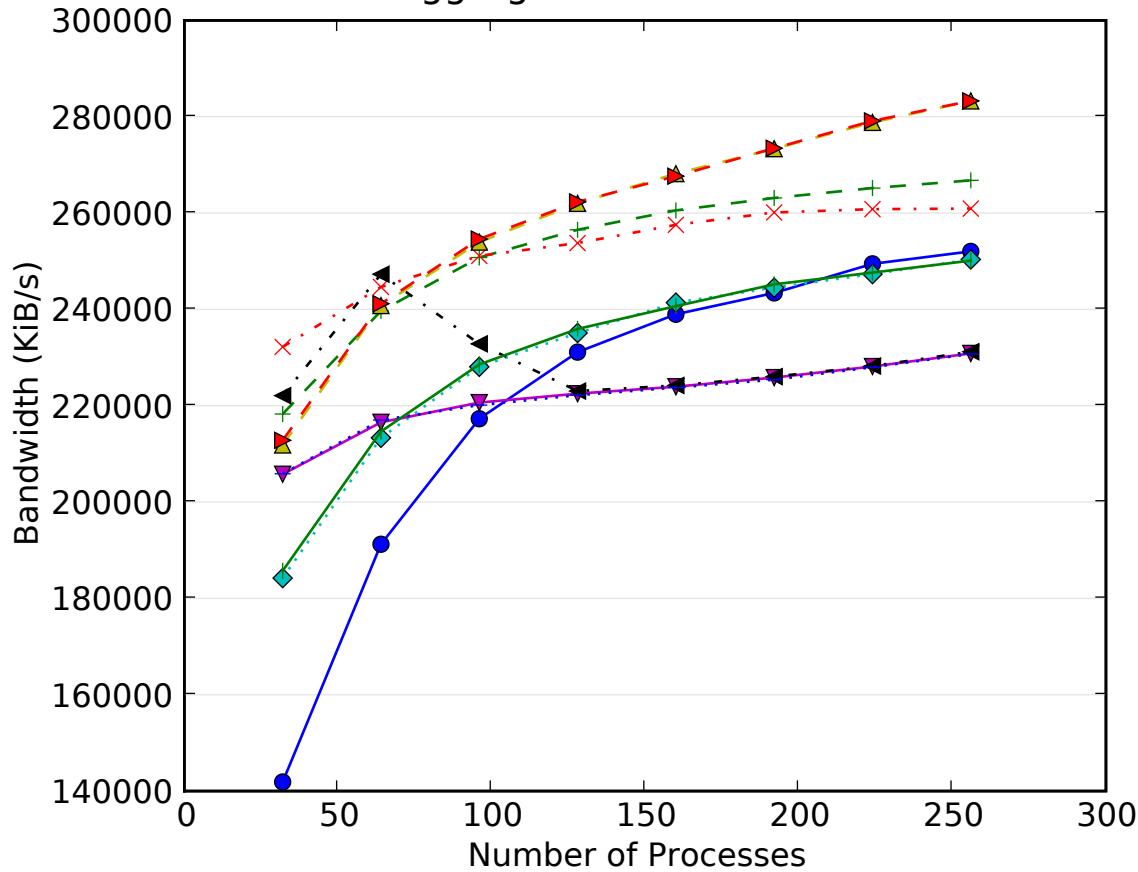
Read Latency Maximum



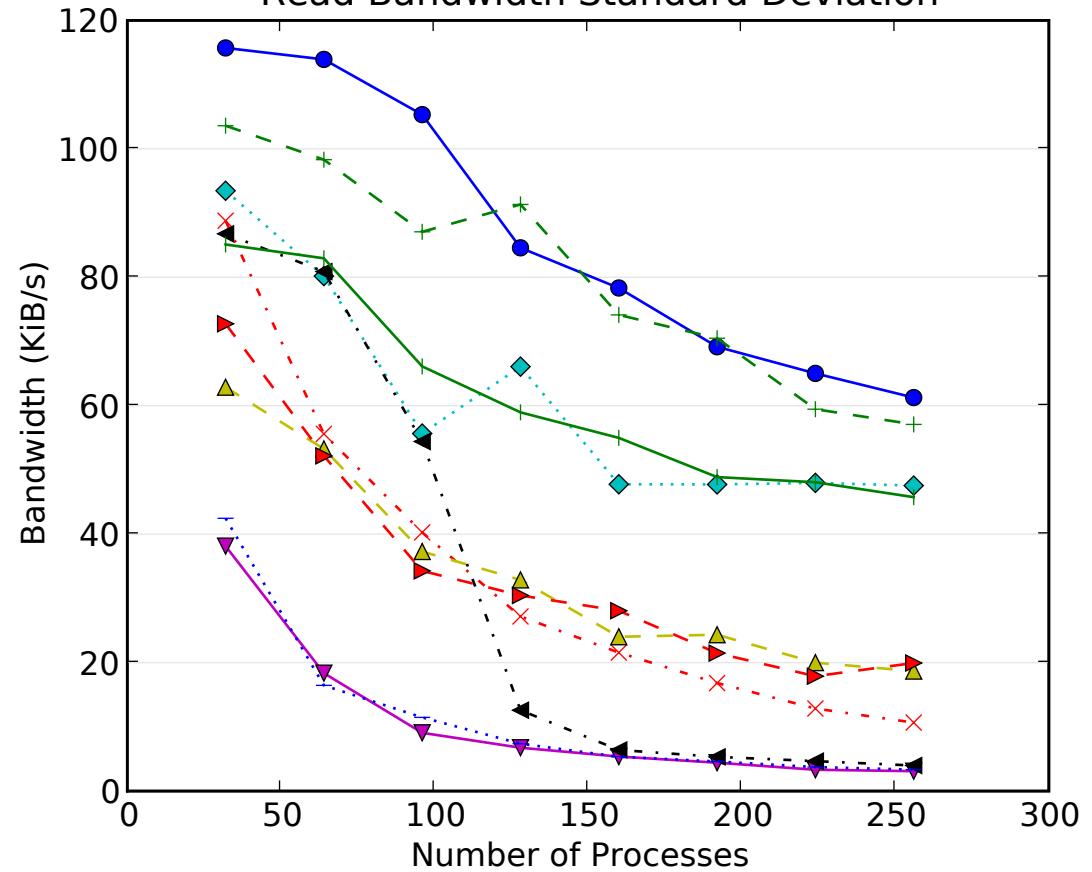
● — as-antic	○ — as-noantic
✖ — bigq	— vr-scan
◆ — fifo	▲ — cfq-idle
■ — deadline	··· — noop
— vr-sstf	— cfq-noidle

# RAID 1+0 (8 disks) - Sequential readers

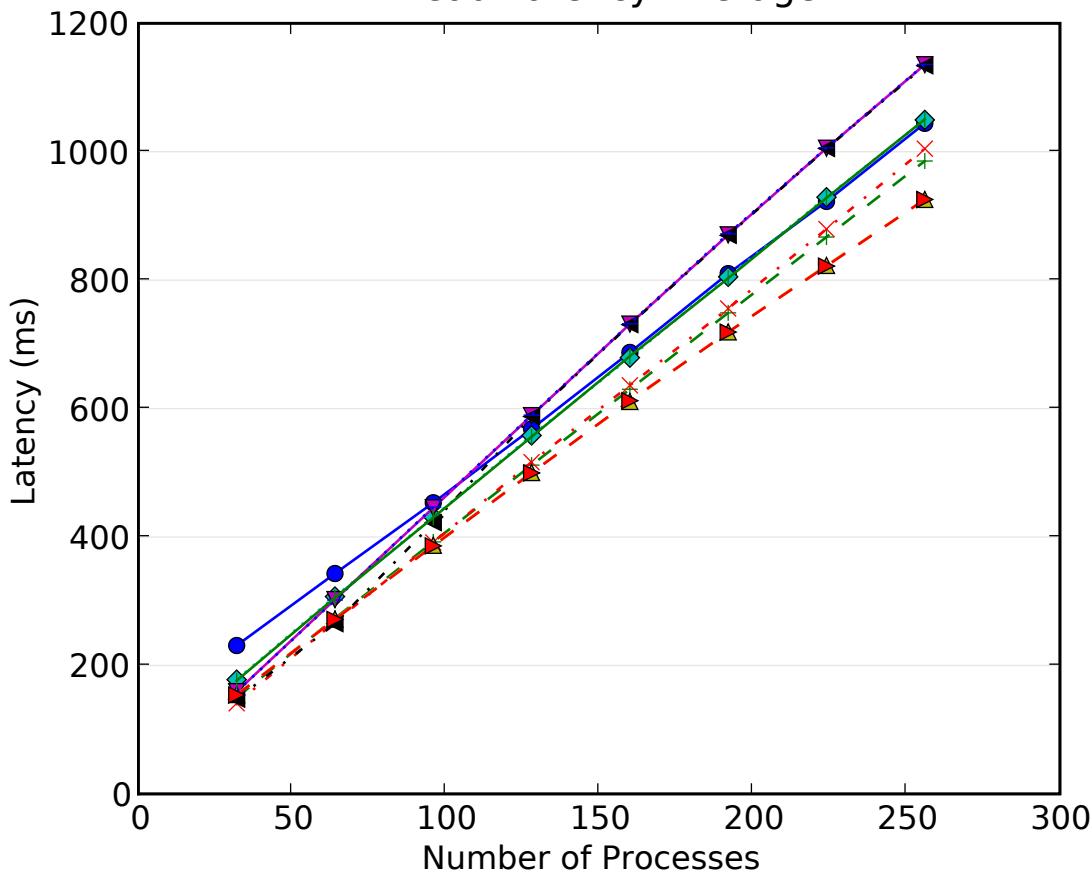
Aggregate Read Bandwidth



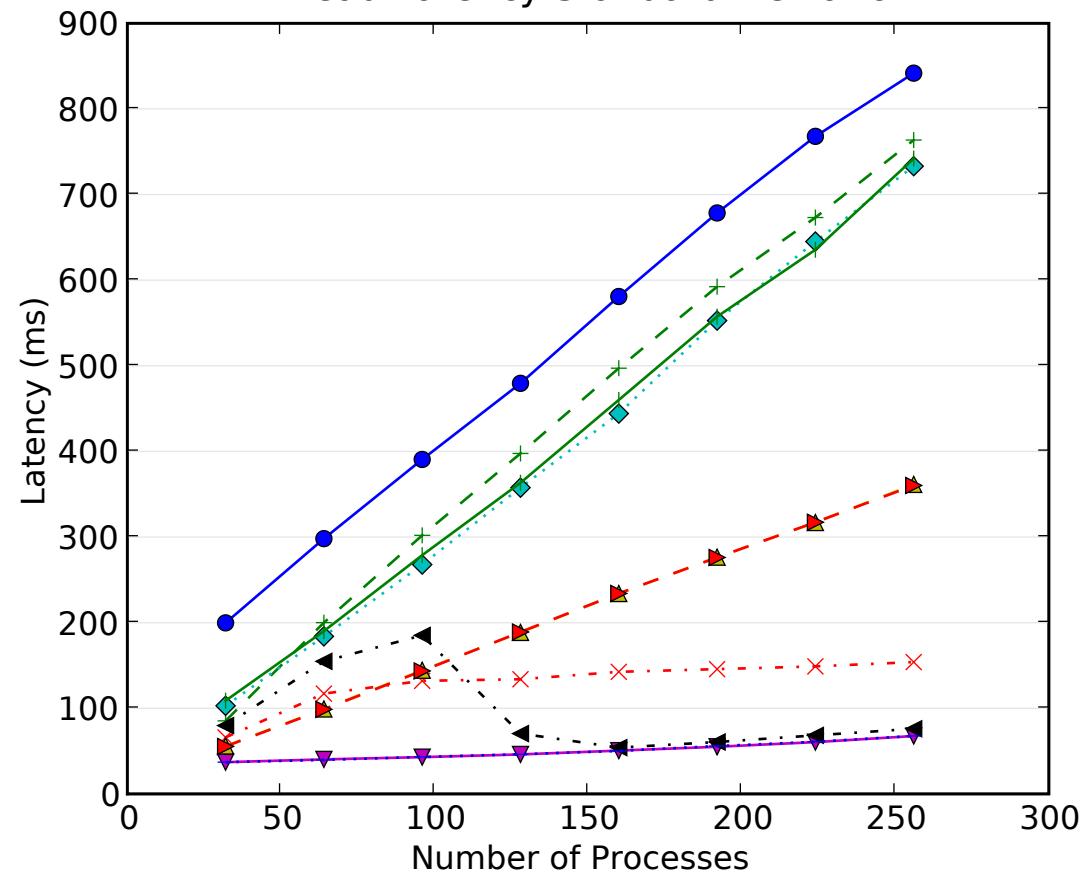
Read Bandwidth Standard Deviation



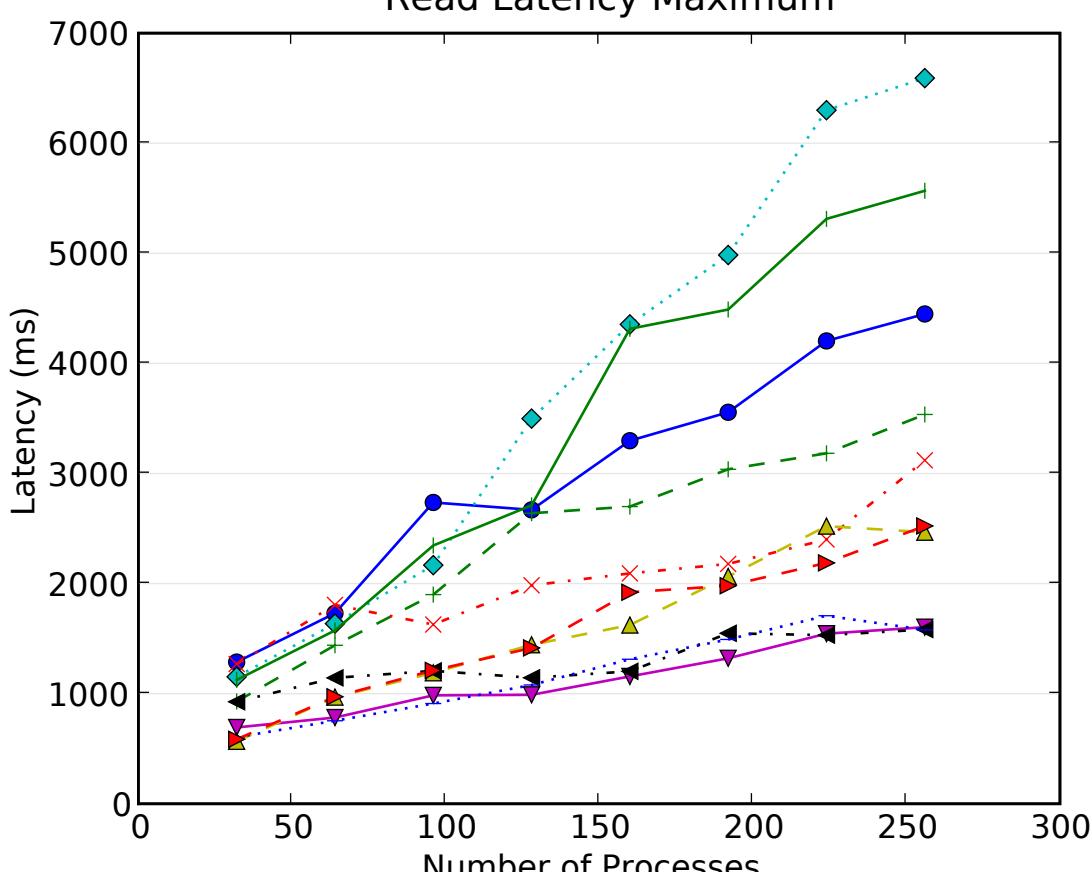
Read Latency Average



Read Latency Standard Deviation



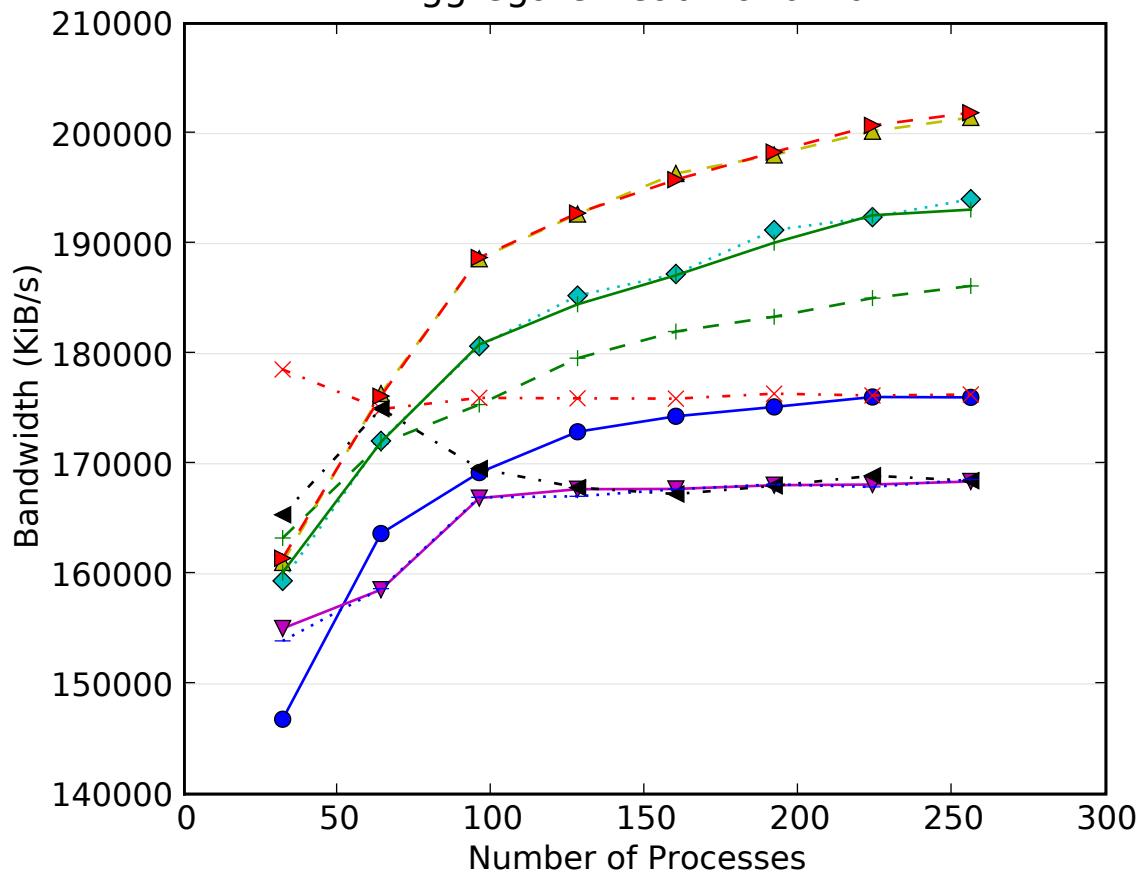
Read Latency Maximum



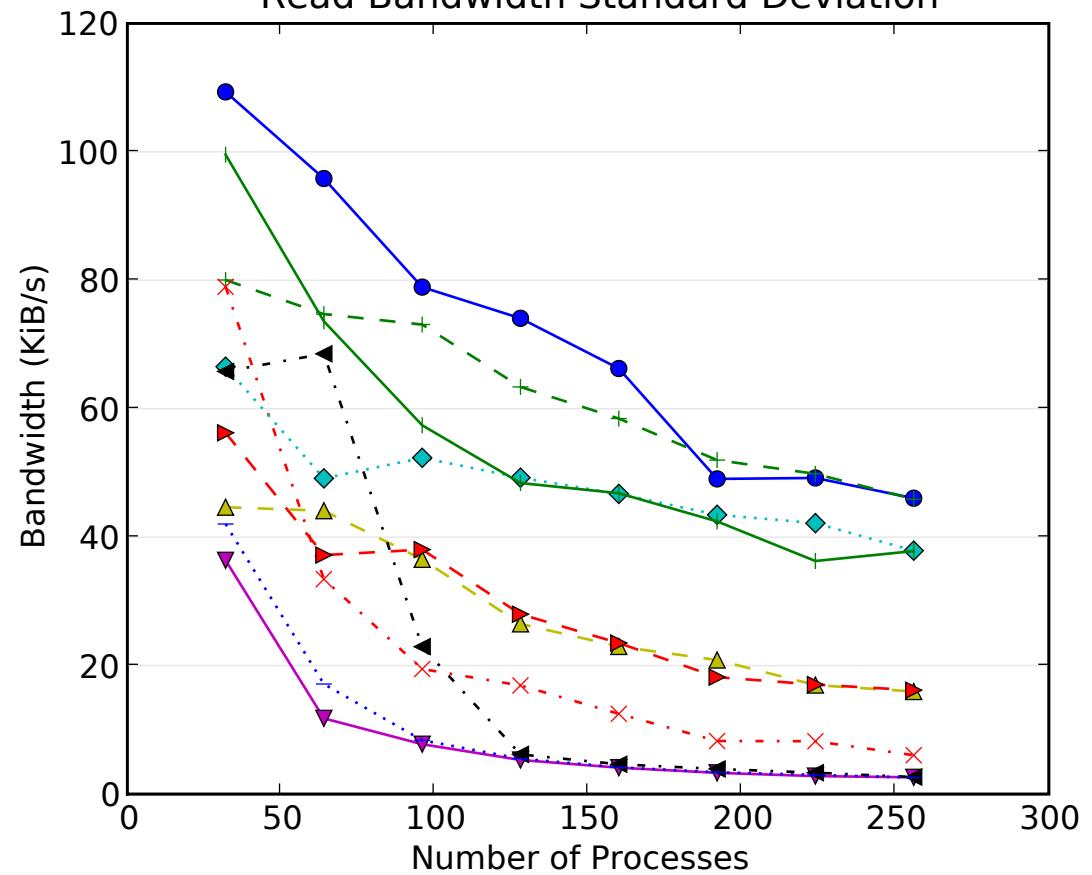
as-antic	+
as-noantic	+
bigq	-x-
vr-scan	-diamond-
fifo	-v-
cfq-idle	-triangle-
deadline	-triangle-down-
noop	-dash-dot-
vr-sstf	-dash-dot-dot-
cfq-noidle	-x--

# RAID 5 - Sequential readers

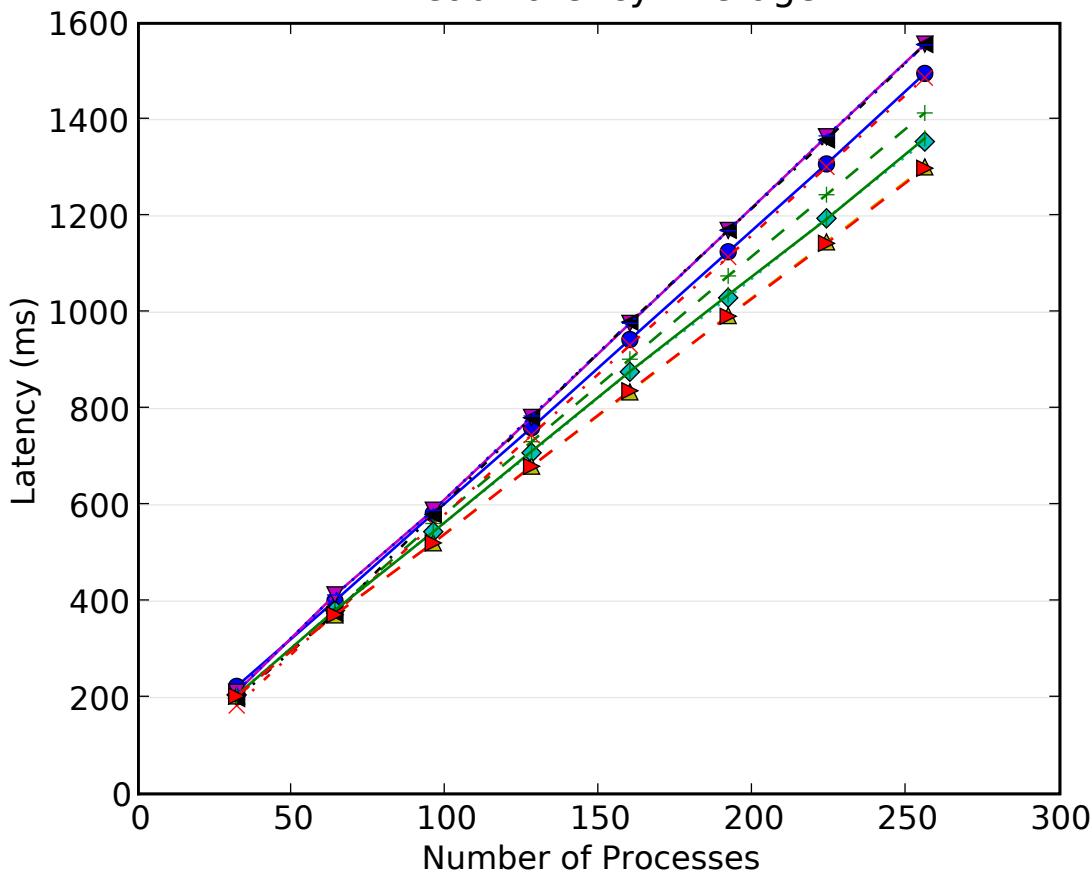
Aggregate Read Bandwidth



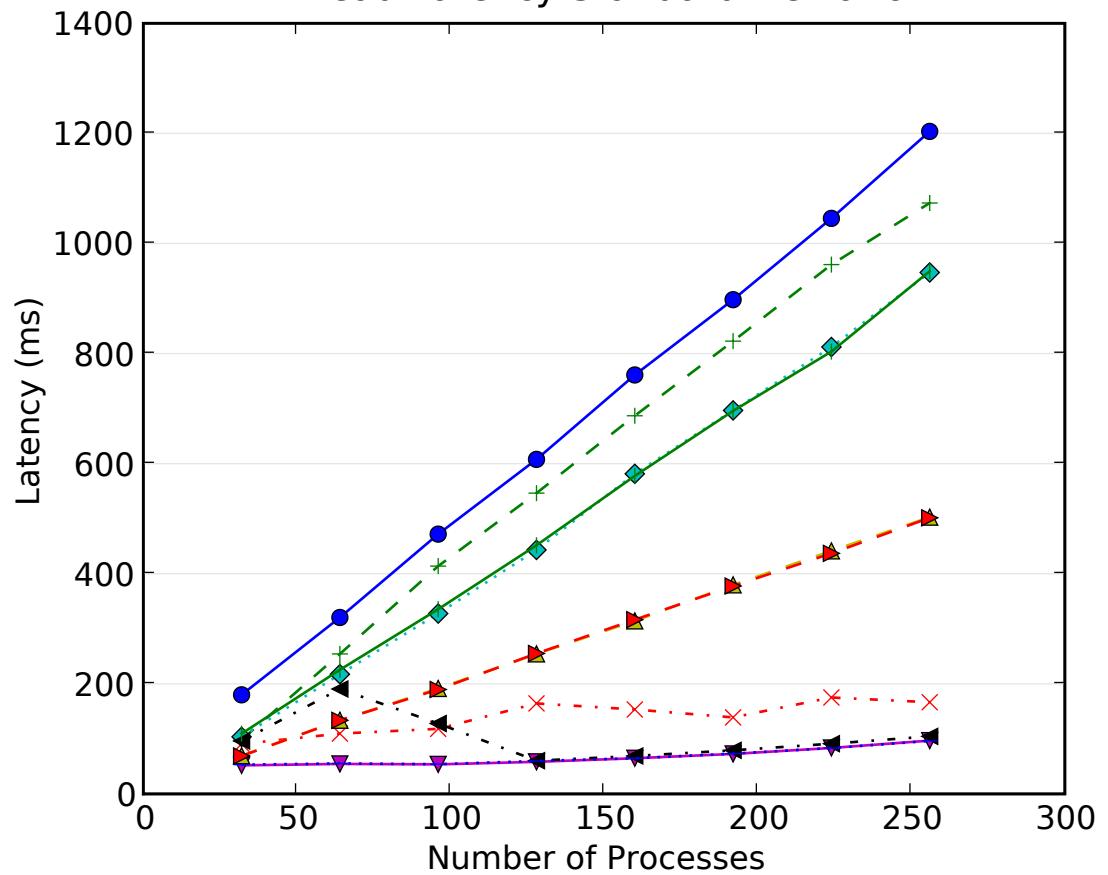
Read Bandwidth Standard Deviation



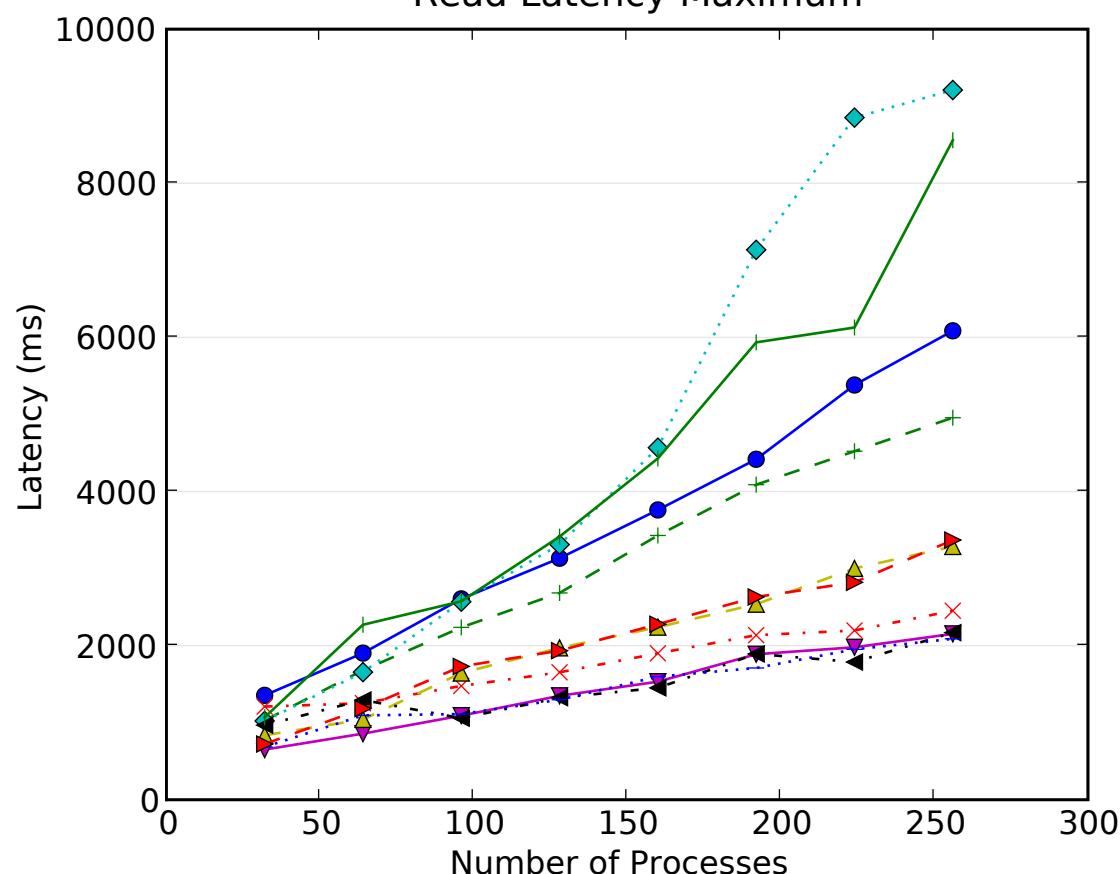
Read Latency Average



Read Latency Standard Deviation

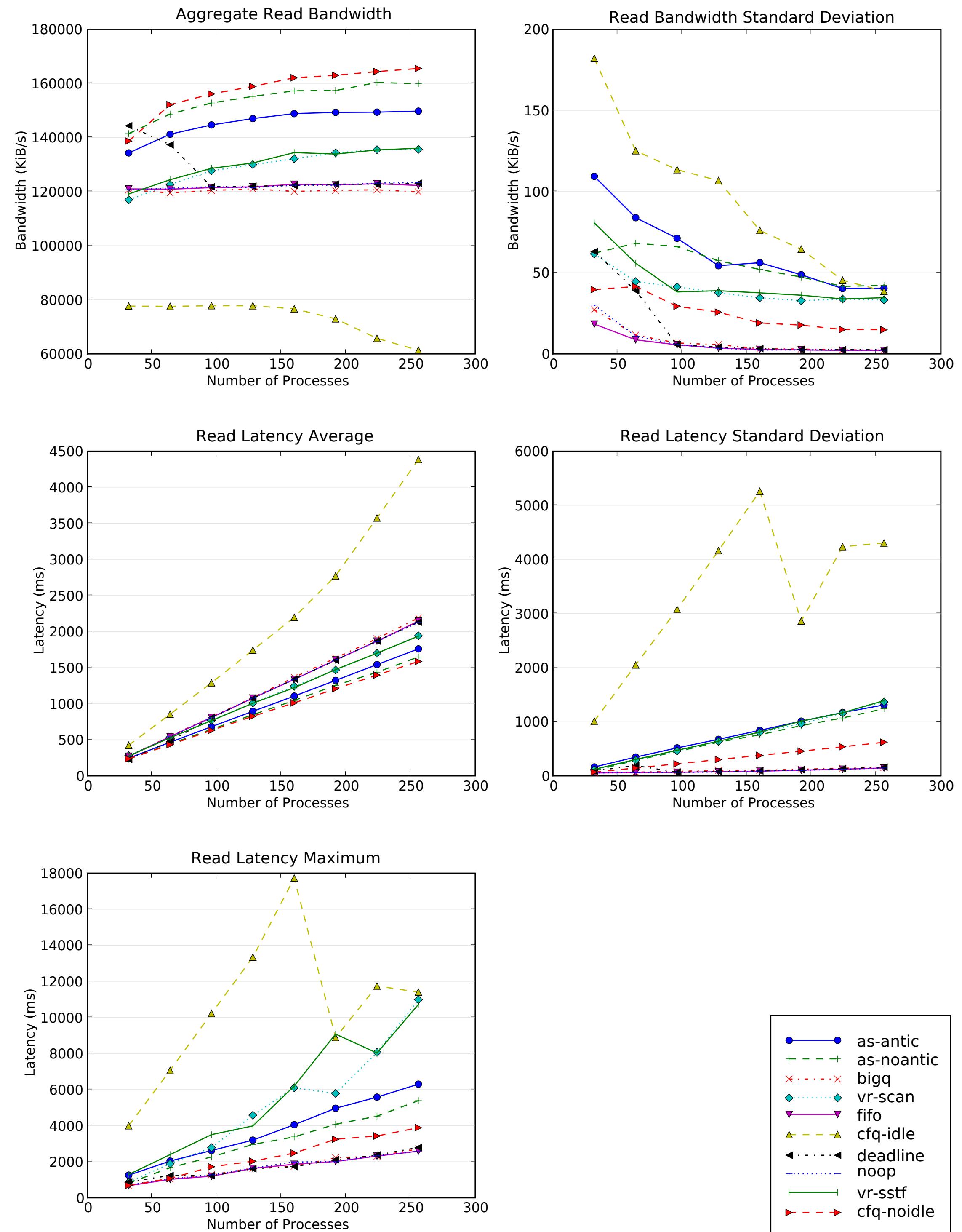


Read Latency Maximum

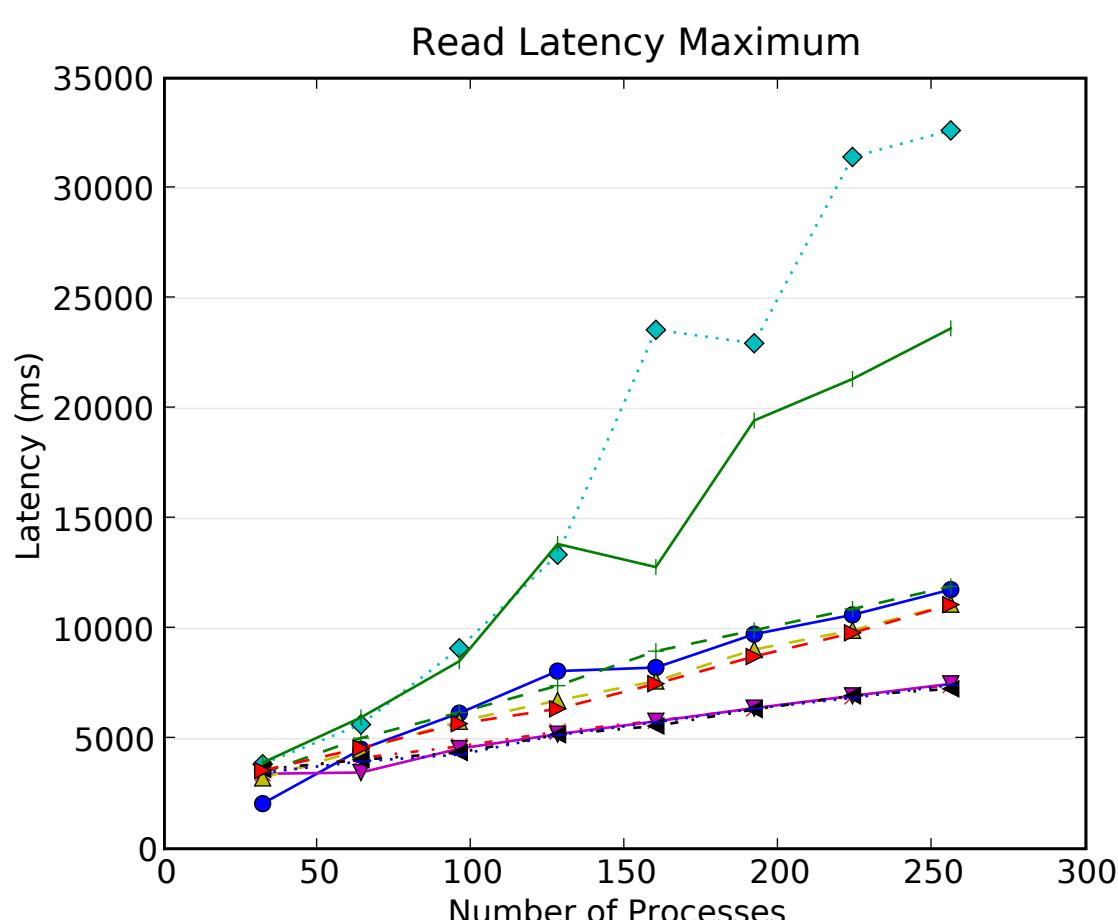
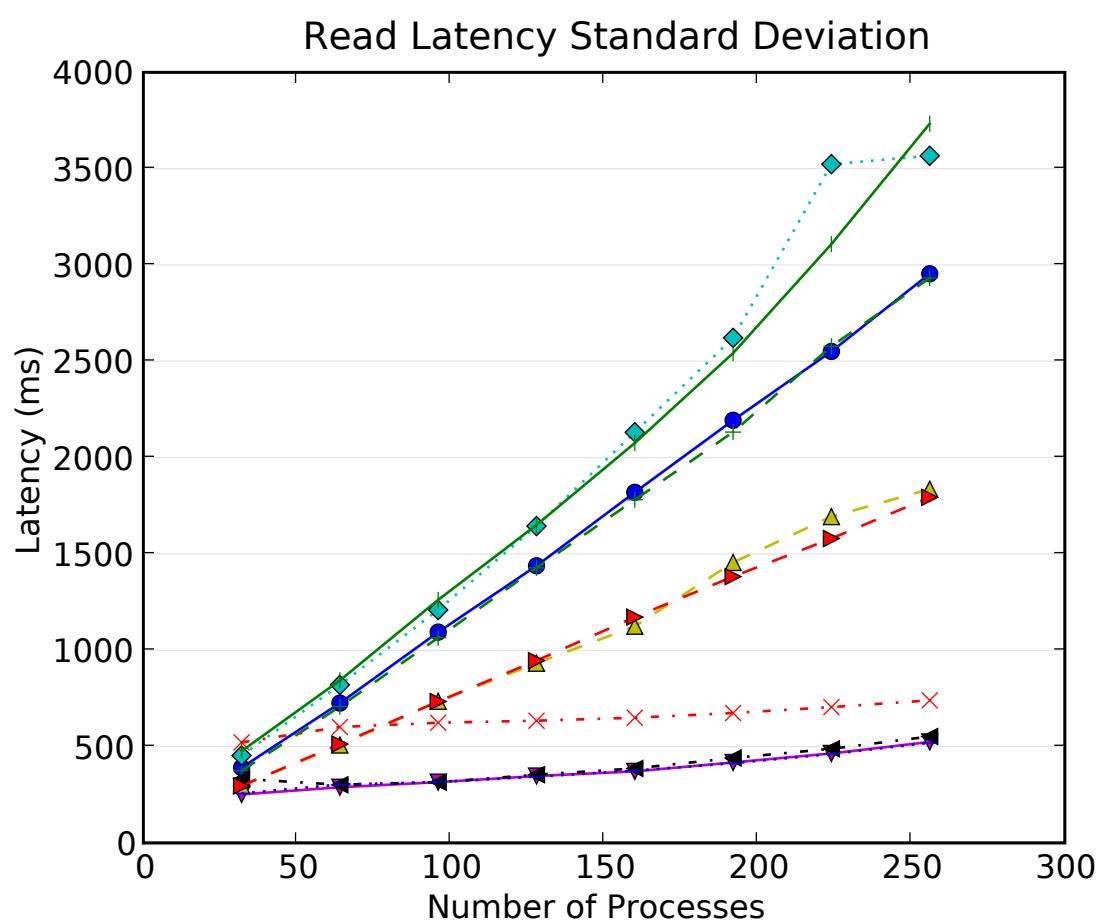
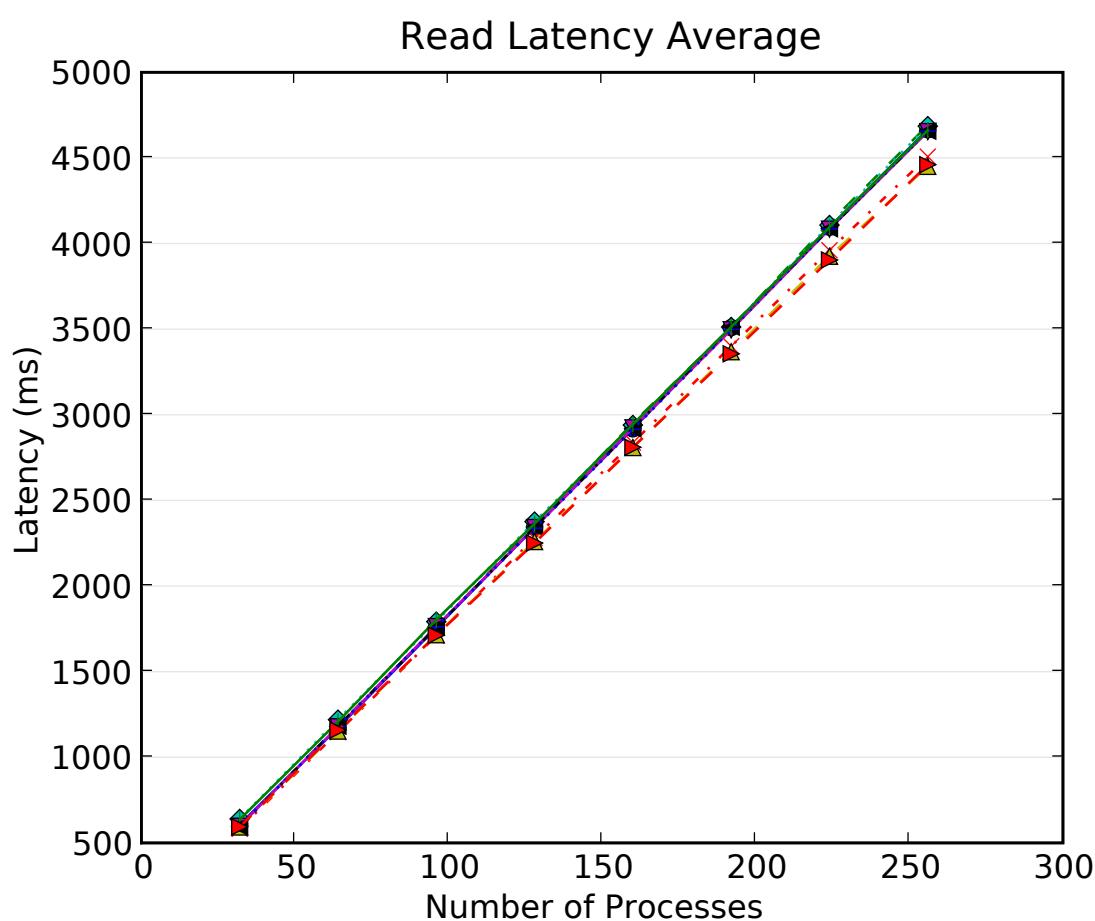
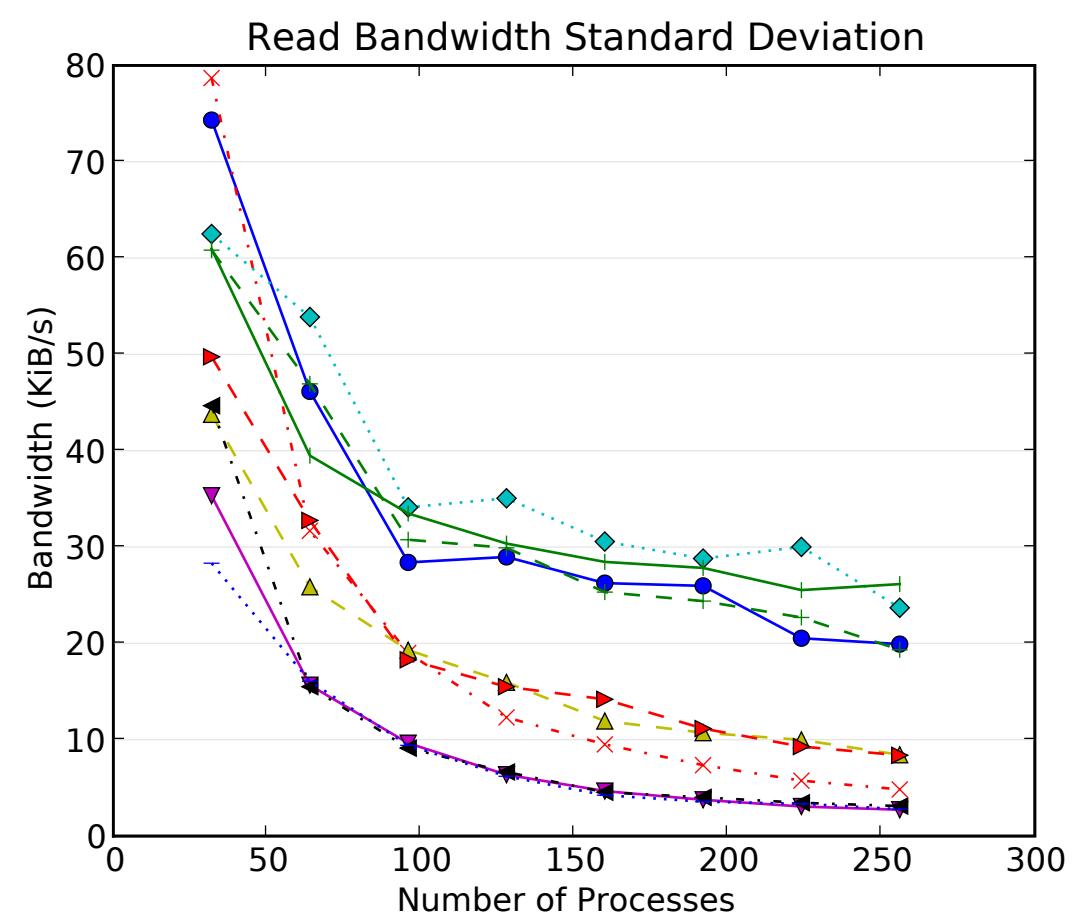
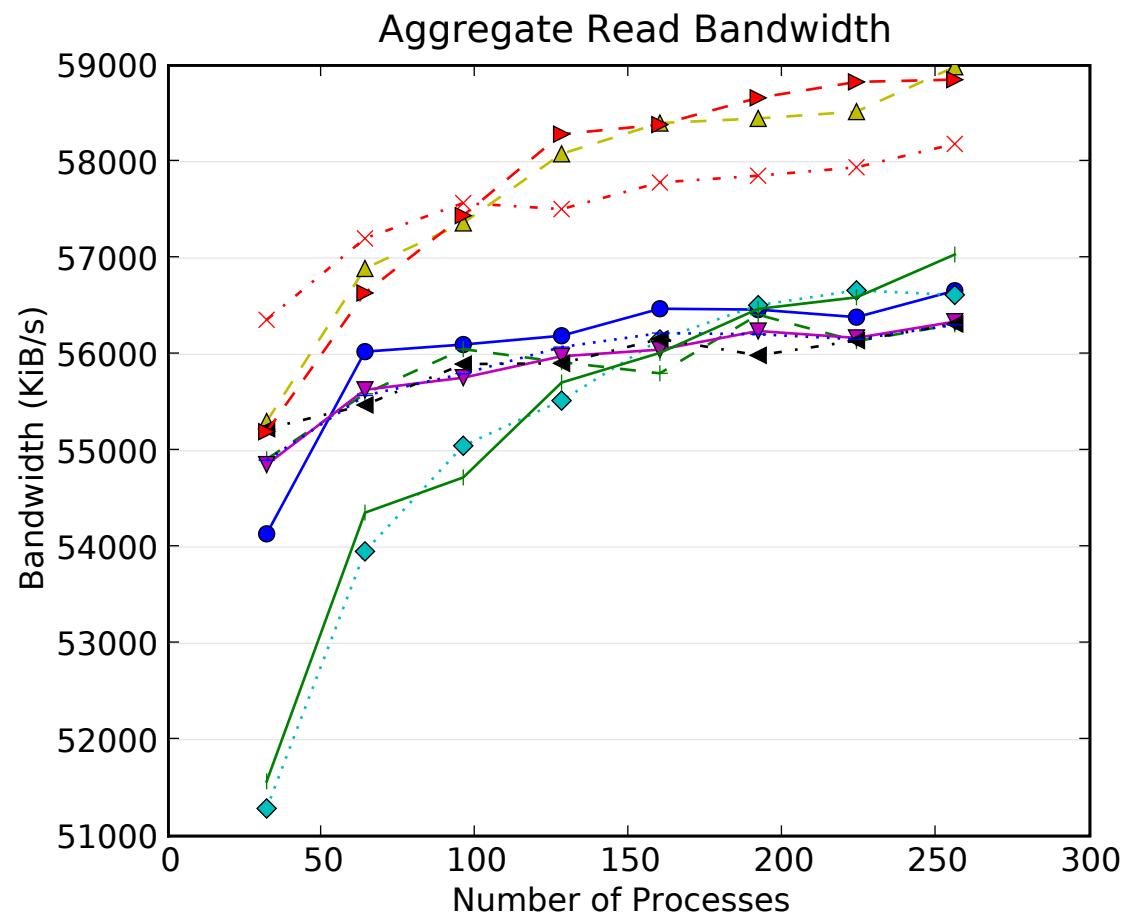


● — as-antic	— as-noantic
× — bigq	— vr-scan
▼ — fifo	— cfq-idle
▲ — deadline	— noop
— vr-sstf	— cfq-noidle

# RAID 6 - Sequential readers

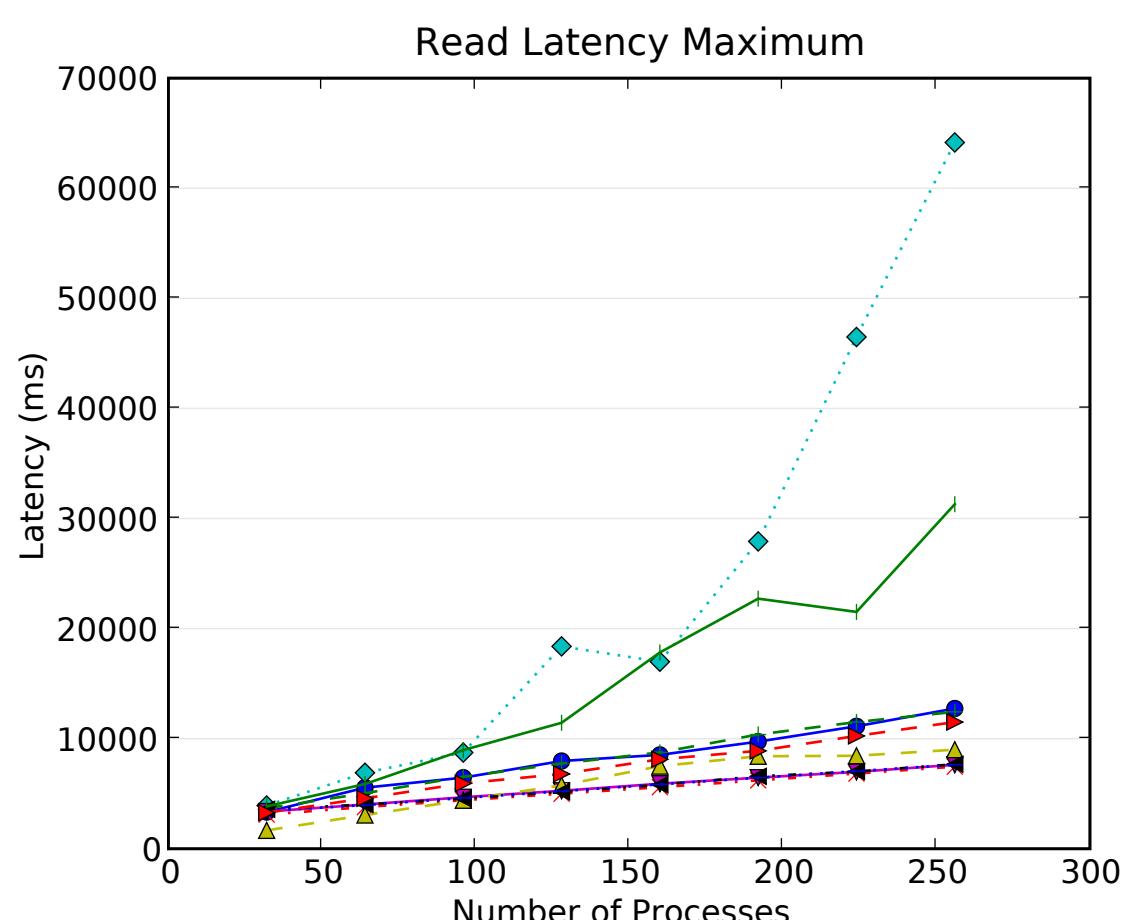
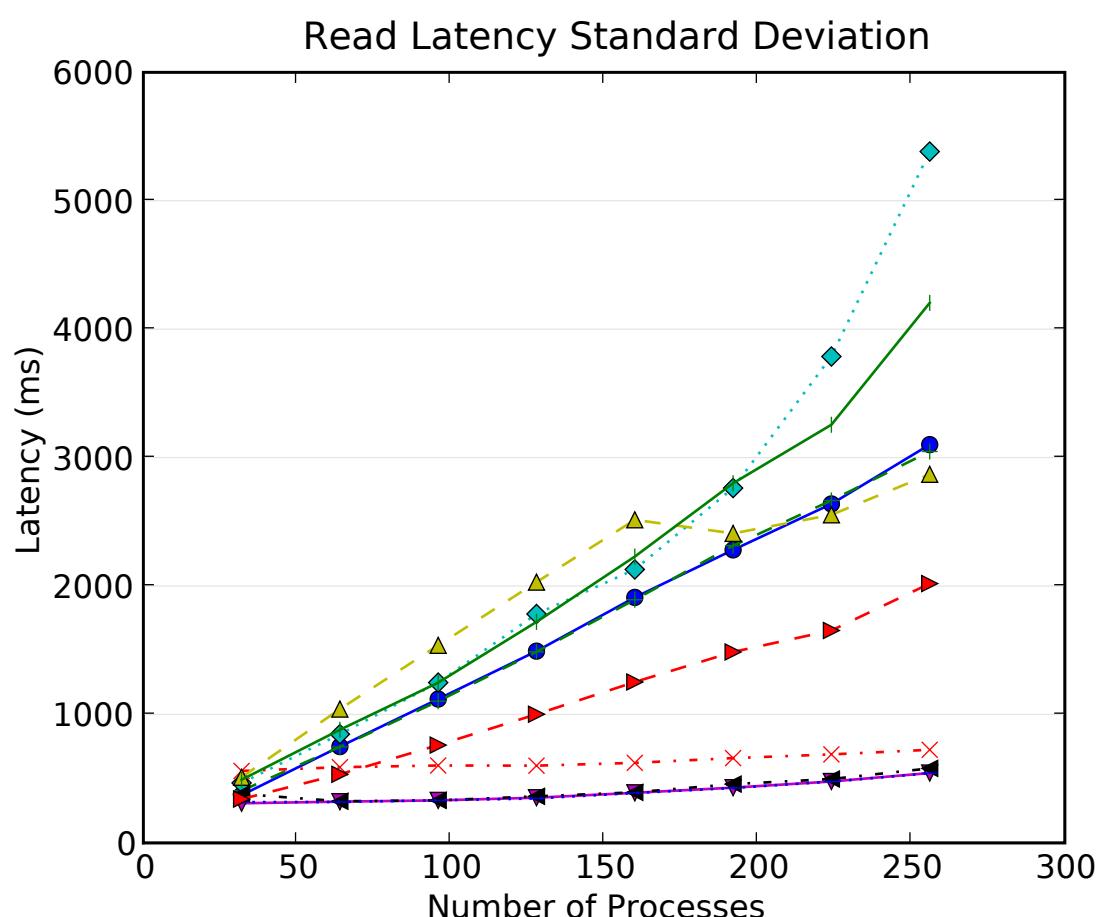
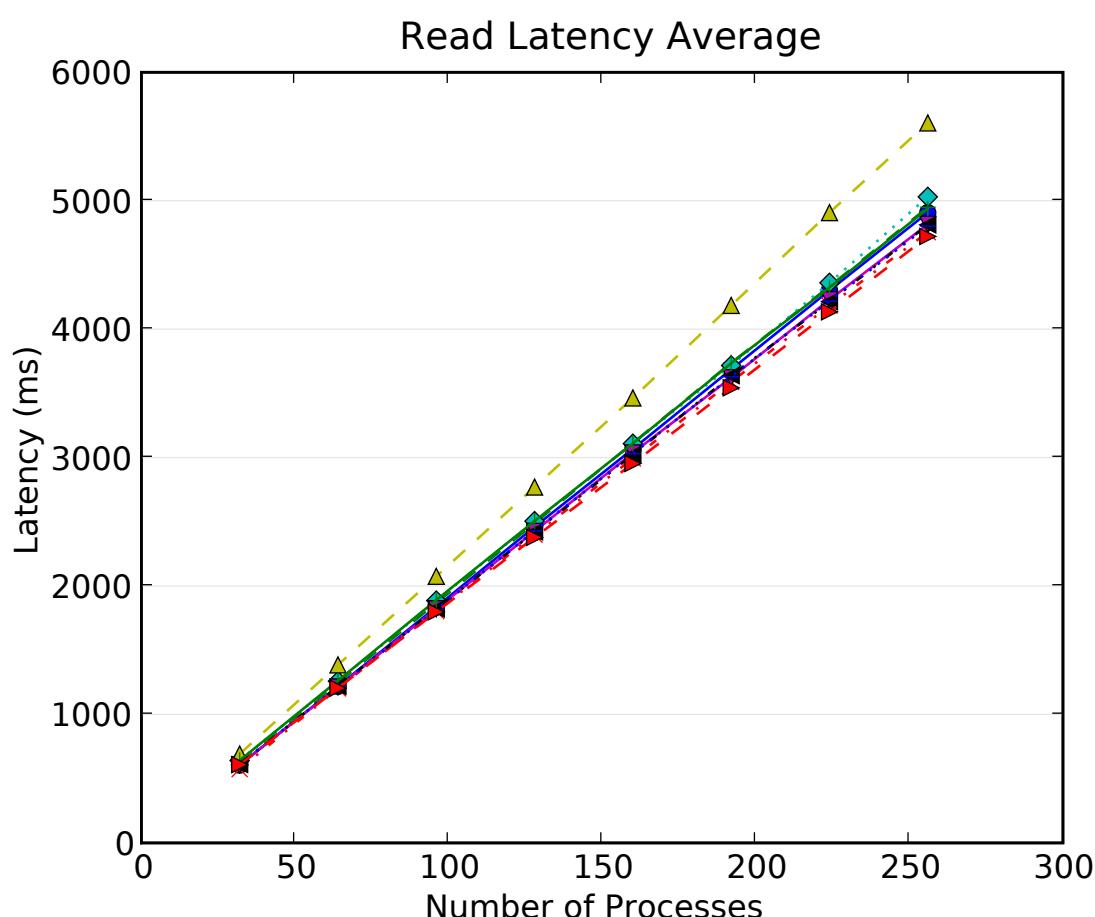
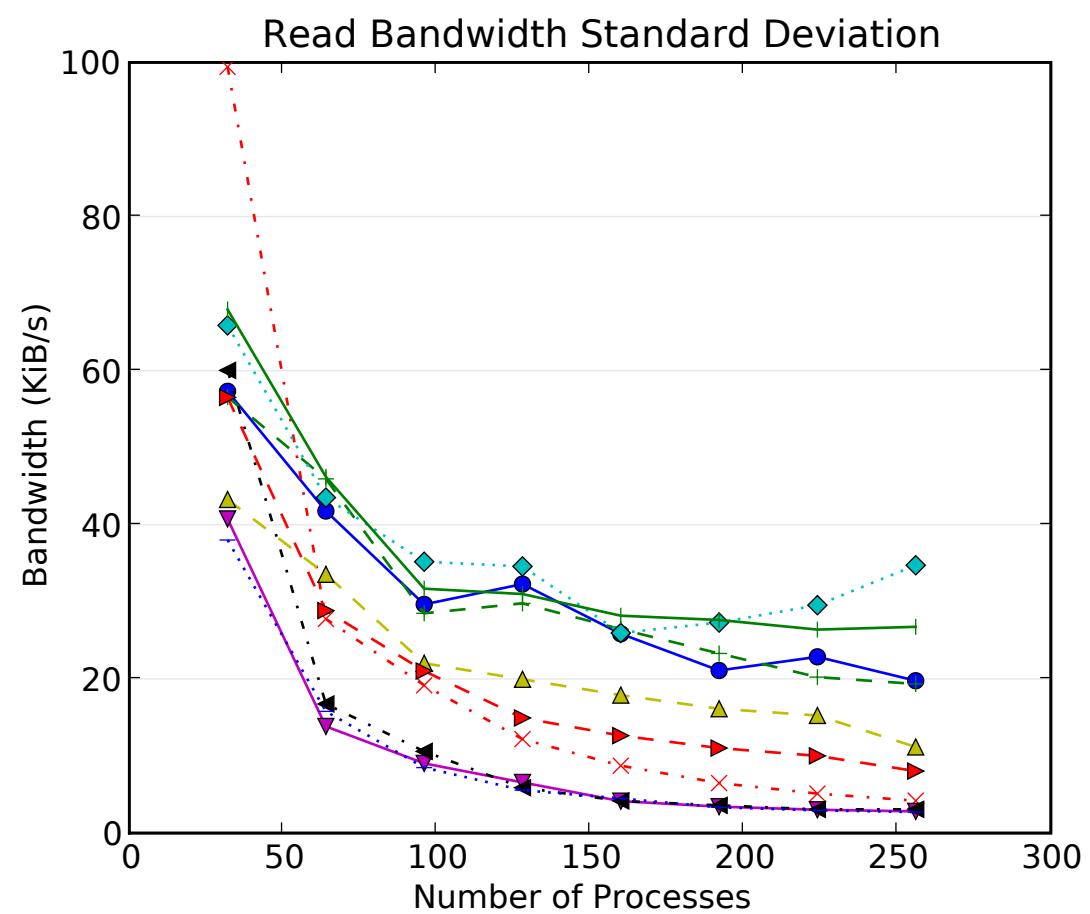
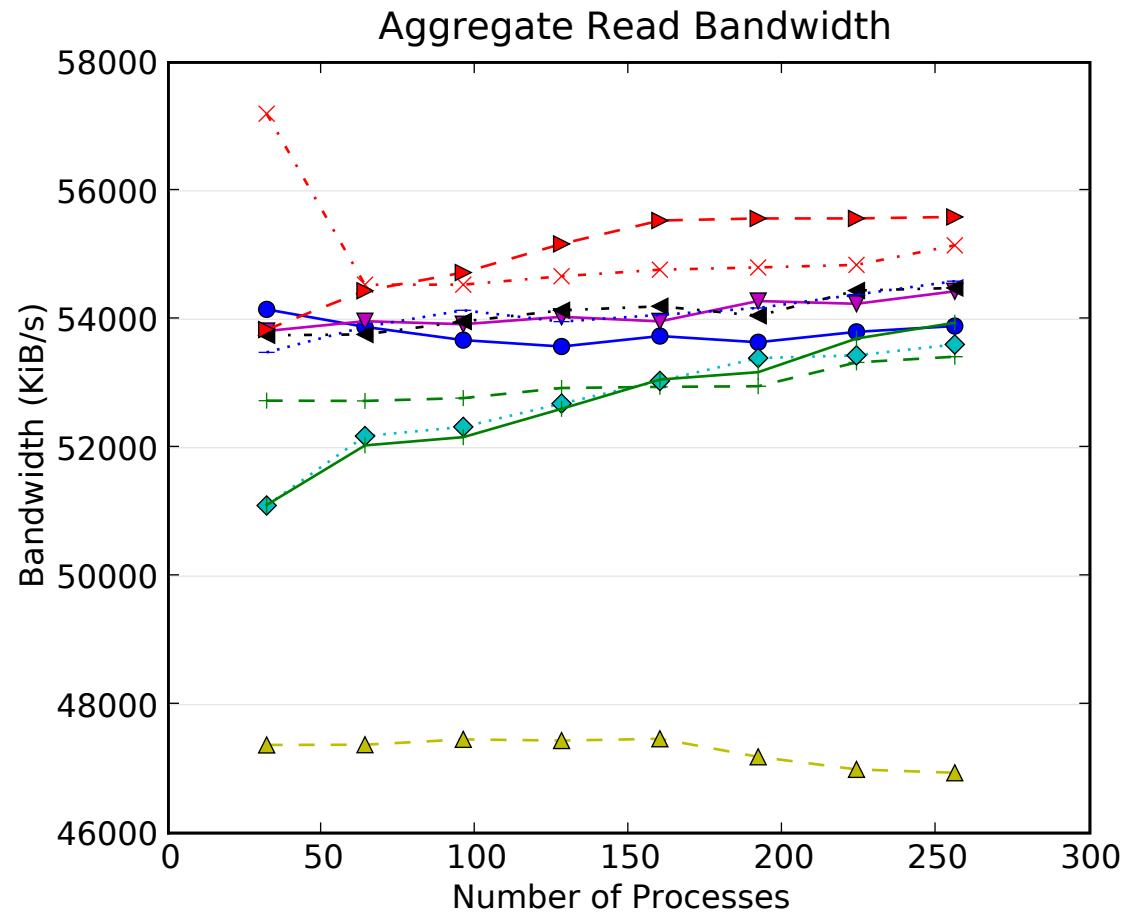


# Single disk (RAID controller) - Sequential readers



● — as-antic	— + — as-noantic
✖ — bigq	— ◆ — vr-scan
▼ — fifo	— ▲ — cfq-idle
■ — deadline	— · — noop
— + — vr-sstf	— ▶ — cfq-noidle

# Single disk (host controller) - Sequential readers



●—○ as-antic	○—○ as-noantic
×—× bigq	◆—◆ vr-scan
▼—▼ fifo	▲—▲ cfq-idle
■—■ deadline	···■··· noop
— vr-sstf	···—··· cfq-noidle